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PRINCIPLES OF THE DIETETIC TREATMENT OF DIABETES MELLITUS.

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BY C. W. PURDY, M.D., LL.D.
CHICAGO, ILL.

I have been greatly honored by this society in an invitation to present before its members some of my views upon diabetes. While such a task is by no means an unpleasant one, in view of the great intrinsic interest of the subject, the importance of the class of cases in clinical practice and, lastly, the familiarity of the picture to my mind, in consequence of having with considerable care and thought gone over this field with special interest for a number of years. I must, however, confess some hesitation in the undertaking, since very divergent views have been held upon the subject by so many eminent observers, not only as to the etiology and pathology of the disease, but also as regards its proper management. In addition to this the literature of the disease—which is prodigious in volume—is yet so inharmonious and even contradictory, as a whole, that it is exceedingly difficult to glean from it any very uniform or systematic basis of knowledge of the true nature or pathology of the disease. But while our knowledge of the nature and pathology of diabetes at present rests very largely upon theory and speculation, experience has taught us much that is valuable in the management of the disease, and therefore, it has seemed to me that the present discussion might prove most valuable and useful if confined largely within the limits of management. I have consequently chosen as the subject for present consideration the principles of the dietetic management of the disease, to which has been added a request that I make some special reference to the disease as it appears in the aged.

The dietetic management of diabetes has been a somewhat stereotyped matter for very nearly a hundred years, the old diet lists and forms having been perpetuated both in clinics and in text-books with comparatively few alterations since the days of John Rollo. This is the more regrettable in view of the fact that very decided advances have been made upon this subject within a comparatively recent period, so that our power of controlling the disease and of conserving the lives of these patients has been very distinctly advanced.

As regards the disease in the aged. So far as my own individual experience and observations are concerned, I have come to look upon diabetes after middle life as one of the most manageable diseases with which the physician has to do, if he only has entire control of the patient. So strong, indeed, has become my conviction of this fact as it appears to me, that I am in the habit of meeting the issue squarely with my patients in the assurance that if they fall victims to the disease it will be the result either of thir own or my neglect. I refer here especially to primary cases in people over 50 years of age, who have not already been neglected to the extent that the disease has made serious inroads upon the strength, and especially upon the body weight, of the patient. On the other hand, the compact between the physician and patient must be of the most solemn and vigilant order if the concerted assault upon the disease is to prove successful, because no other disease demands more detailed observation and closer watchfulness in all details of management, and the reasons therefor will be considered subsequently.

The diet of diabetic patients should be so ordered as to maintain and, if possible, increase the body weight and strength of the patient, as these are the first to be undermined by the disease. Now, in order to compass these primary objects, a systematic series of frequently recorded observations must be made of the quantity and quality of the food actually ingested; of the quantity and quality of the waste excreted, especially by the kidneys; and of the actual body weight. By this means only is it possible to detect those disturbances of metabolism caused by the disease and to refer directly to their cause. We shall be in a position still better to estimate these if we first take a brief survey of the relative and actual values of the various food products at our command. By comparing these with the known physiologic requirements in health, we shall be enabled the most readily to supply those deficiencies caused by the disease, and thus maintain that equilibrium of metabolism upon which all successful management depends.

In physiologic observations it has become the custom to adopt Rubner's suggestion of measuring body energy or force, which results from oxidation changes in the economy, by the unit value of the calorie—or the heat unit. We understand by the word "calorie" the amount of heat necessary to raise one kilogram of water one degree Centigrade. It has been ascertained after careful and repeated investigations that all our food products, through their consumption in the body, produce definite amounts of heat, or the equivalent of this measure in the form of force. By grouping together the various food products in their several chemic groups we shall be able readily to glance at the calorie value of each, and thereby adjust our diet list so as to cover the actual requirements of the economy. For example, it has been found that one gram of albumin, through its conversion into urea, water and carbonic acid, yields approximately four calories of heat or force; that one gram of carbohydrate, through its conversion into water and carbonic acid, yields approximately the same, i. e., four calories; that one gram of fat, by its conversion into water and carbonic acid, yields a little over nine calories; and that one gram of alcohol yields about

seven calories. With these data before us it is easy enough to establish a diet-ration that will readily maintain the equilibrium of metabolism in a healthy individual, since all we have to do is to furnish him food in quantity and quality such as will represent 2500 to 3000 calories. Thus from 100 to 120 grams of albumin, 55 to 70 grams of fat and from 400 to 500 grams of carbohydrate would cover the requirements, and these are about the average proportions of each naturally used in health.

In the case of the diabetic patient the problem is not so simple, because the carbohydrate foods in such cases are rendered more or less inefficient for the reason that they are more or less—indeed, sometimes totally—excreted in the urine as unused or waste material. We can very readily perceive what a serious obstacle is placed in the way of supplying the normal amount of nutritive material by the withdrawal of the whole or even a considerable proportion of the carbohydrate group, constituting as it does normally at least 60 per cent. by weight of the whole daily ration. Fortunately, however, in many cases of diabetes—in fact, in most cases after middle life—a very considerable capacity of utilizing carbohydrates remains. In such cases we may, therefore, give more or less carbohydrates, and the deficiency in heat or force units remaining may usually be made good by increasing the proteids. I have frequently in such cases been able to give from four to six ounces of ordinary table bread daily without causing sugar to appear in the urine, and this represents a calorie value of from 400 to 500 units.

As previously indicated, there exists among diabetic patients the greatest differences in individual capacity for utilizing the carbohydrates. Some can take and utilize comparatively large amounts, as has just been shown; others very much smaller amounts, while a few can not take carbohydrates in the smallest quantity without their immediate escape by the urine in the form of sugar. Not only this, but also very wide oscillations of the tolerance for carbohydrates occur in the same case at different, and sometimes, very briefly separated periods. We are not always able to fix upon the precise cause of these oscillations, because we are not entirely familiar with all the influences which lead to them, but they furnish us one of the strongest reasons for constant vigilance over the balance of metabolism. Again, some cases may ingest 200 grams of carbohydrate food and lose 45 or 50 grams by the urine, leaving available for the system 150 grams, nearly 450 units. In such case it is clearly good policy to allow a moderate proportion of carbohydrate food, both for its value as a strengthening and building material and for the variety it offers the patient in his daily ration.

Unfortunately, in some cases of diabetes, comprising chiefly spare subjects in the aged, and at some time all young subjects of the disease, carbohydrates can not be used without their total escape in the urine. In such cases the use of carbohydrate foods in any considerable quantity is distinctly injurious to the patient in more ways than one. In the first place, if these cases are put upon carbohydrates, in time they develop a decidedly decreased capacity for assimilating starch and sugar in all forms, because the cells concerned in sugar consumption are functionally weak and impaired, and their overwork leads with certainty to total impairment of function. In addition to this, the increased percentage of sugar in the circulation—hyperglycemia—which always occurs under such circumstances, can not but be responsible for at least some of the many secondary complications of the disease; and in the aged especially, I might mention the damage so often resulting to the cardiac muscle, which so suddenly terminates the lives of so many aged diabetics. Again, if carbohydrates be liberally supplied in severe cases, they are not only of little or no use to the patient, but they take the place of other foods which would be valuable in sustaining nutrition. The picture must be familiar to all of you, to see diabetics who tell you that they can not get enough to eat, and are weak and spare. They eat and stuff themselves, yet grow daily weaker and more emaciated because their food largely escapes as waste unutilized by the organism. While the stomach is overloaded the tissues are starved. We may, therefore, safely accept the proposition that the use of carbohydrate foods in the severe grades of diabetes surely proves injurious if, indeed, not dangerous, and hence we must look to other sources to supply the deficiency made necessary by the withdrawal of this class of foods.

If we turn to the proteid group with the view of making this the exclusive source of supply, we are met by the serious fact that it is an absolute impossibility to introduce enough nutritive value in proteid to compensate the daily loss of material and force in the economy. Noorden points out that "1000 grams of meat and six eggs furnish at most but 1500 calories; a deficit of at least 1000 calories remains with its injurious consequences," if we attempt to diet these cases exclusively on proteids, and yet an exclusive meat diet has among us enthusiastic advocates. It is clear, however, that we can only increase the ratio of proteids with safety to certain limits, after which we must look to other sources to supply the deficiency resulting from withdrawal of the carbohydrates. It is precisely in this direction that the greatest advance has been made in the dietetic treatment of diabetes in recent times. By the substitution largely of fat we obtain a closely allied group of foods, chemically speaking, which represent a value in units nearly three times greater, and eminently suitable for our purposes. The French school was the first to recognize the value of the use of fats in these cases, and this principle has been incorporated in the French practice for a considerable time past. More recently it has been adopted in Germany and with much success. It has already been shown that the calorie value of fats is over 9 units per gram, while that of proteid and carbohydrates is only 4 units. It so happens in diabetes, for the most part, that there is a remarkable tolerance for fats; indeed, many of these patients have a special liking for fatty foods. In moderate grades of diabetes no difficulty will be encountered in substituting fats for a partial withdrawal of carbohydrates. These cases will, under such management, lose their glycosuria, gain in weight and strength, and progress most satisfactorily. The only question in this connection calling for serious consideration is that of the entire substitution of proteid and fats for carbohydrates in those graver forms of the disease in which all the carbohydrates taken into the system are immediately eliminated, or still more serious when even larger amounts of carbohydrates are excreted than are taken into the organism, as is sometimes the case. The argument that diabetic patients will not assimilate large quantities of fats has been repeatedly disproved, both experimentally and in actual practice,

so that the converse of this may be accepted as a rule to which there are few exceptions. Indeed, as much as 150 grams of fat have been given—representing 1350 calories—and with results most satisfactory. It has been demonstrated through Weintraud's experiments and observations upon metabolism, that the entire substitution of fats for carbohydrates effectually prevents the wasting of the body albumin and conserves the weight and strength of the patient.

There has existed a somewhat prevalent idea—although an entirely theoretic one—that large amounts of flesh foods predispose to diabetic coma. Now what little we think we know of the nature and cause of diabetic coma at present rests upon pure theory. In actual practice we certainly find that diabetic coma usually arises in those cases attended by a high percentage of sugar in the urine, and moreover, usually at the period or soon after the sugar excretion reaches its maximum. Furthermore, we are taught to believe and, I think, properly so, that the lower we are able to reduce the sugar percentage in the urine, the further shall we remove the patient from the danger of the appearance of coma. It should be borne in mind that an exclusive proteid diet is not here advocated, but rather the discussion is in favor of a proteid and fat diet in certain cases. I can not perhaps more tersely express the advanced views upon this question in conclusion than in the words of Noorden, to whom we owe so much for his classic digest of our knowledge on the subject. He says: "From what I have been able to glean from the literature, from what I myself have seen, and from what has been related to me by other judicious partisans of the fat-and-flesh diet, it appears to me that the dread of coma so produced is wholly unfounded. I believe, therefore, that for every really grave case of diabetic glycosuria, the fat-and-flesh diet to the exclusion of carbohydrates is to be regarded as the ideal regimen, against which no serious objection can be raised."

It remains in this connection to speak of the place that alcohol should occupy in the regimen of the diabetic, or if its use be advisable at all, and this question should receive careful and sincere consideration. We must, in the first place, keep in mind the well-known dangers of the use of alcohol to the nervous system, especially when employed in considerable quantities; and, moreover, we must not lose sight of the fact that the majority of diabetic patients are decidedly neurotic. So thoroughly has this been recognized, that many observers have claimed for the disease a nervous origin. Without admitting the latter as true, but recognizing the undoubted neurotic tendencies of these patients, it is clear that the use of alcohol has its dangers, especially if allowed in any large amounts, and therefore, if admissible it must be with due caution and only within strictly moderate limits. On the other hand, we can not ignore the fact previously alluded to, viz,, that alcohol is an agent of considerable value as a food, possessing, indeed, about 7 units per gram, or nearly double that of proteid and carbohydrates. Now, in the more serious cases, where the range of diet is so limited, any change whatever comes as a decided relief both to the palate and stomach. The sense of relief to a full stomach by the post-prandial swallow of cognac is well known. We are also aware of the stimulus to the appetite and digestion afforded by the use of a glass or two of good wine, especially when served with the meat course, and particularly is this the case if much fat is served. It is precisely here that alcohol may be made valuable to diabetic patients as an adjunct food. By serving alcohol in proper quantity with the fatty foods, it enables the patient more readily to increase his fat ration, while at the same time, by furnishing in itself considerable potential force—about 70 calories to the average drink of spirits as whisky—it reduces the actual amount of fat required by an equal number of units. This is important where so much fat is to be consumed, but especially so in the more limited class of cases in which fats are not very well tolerated. Noorden lays down the rule that the average daily allowance of alcohol in ordinary cases of diabetes should not exceed 60 grams. This in itself represents a value of 420 units. This quantity of alcohol (60 grams) is contained in about 4 ounces of whisky; in brandy it would be about $3\frac{1}{2}$ ounces; in white table wine, as Moselle, it would be 30 ounces; in medium grades of claret it would be 23 ounces; in good Burgundy it would be 24 ounces. In prescribing alcoholics each case should be studied upon its individual merits. In some cases the amount should be more moderate than above indicated, especially in those who are unaccustomed to its use, in very young subjects, and in the very pronouncedly neurotic. On the other hand, exceptional cases are met with in which 60 grams of alcohol may with benefit be considerably exceeded, notably in those long accustomed to its use.

Having now somewhat broadly reviewed the essential principles upon which the dietetic treatment of diabetis mellitus should rest; I shall, in conclusion, briefly outline what seems to me the most desirable method of their application in practice. In beginning the treatment it is generally conceded that a gradual enforcement of dietary restriction is safer than an abrupt change from a liberal to a strict diet. Aside from the more serious accidents—such as coma—which some authors fear from abrupt changes, we shall certainly meet with pronounced digestive disorders if we change a liberal mixed regimen for one containing, say 650 grams of meat per day. I usually, therefore, in the beginning furnish the patient the following list of articles allowed:

All meats, including beef, mutton, veal, ham, bacon, poultry and game of all kinds—roasted, boiled, potted, smoked or preserved in any way except with sugar. Sweetbreads, kidneys, heart, tongue, tripe, brain, giblets and marrow-bones, American canned meats and meat extracts, Australian corned beef.

All kinds of fresh fish, including oysters, crabs and lobsters. Dried, cured or smoked fish, including codfish, haddock, herring, mackerel, eels, sturgeon, salmon, sardines, anchovies, shrimps, caviar, frogs and turtles. Fats, oils (animal or vegetable), butter, gelatine. Eggs, raw or cooked any way except with flour. Fresh vegetables, including spinach, lettuce, cucumbers, green string beans, asparagus, cauliflower, red and white cabbage, Brussels sprouts, soft green corn on the cob, mushrooms, onions, cress, leeks, celery, radishes, oyster plant.

Preserved vegetables, including tinned asparagus, French beans, cucumbers pickled in brine or vinegar, mixed pickles, chow chow, olives, sauerkraut, tinned French peas. Eggs, cheese, cream, butter, gelatin and all fats and oils. Spices, including salt, pepper, mustard, curry, cloves, nutmeg, parsley, capers, etc. Soups and broths, if clear and unmixed with bread crumbs, flour, barley, rice or cereals. Nuts, as almonds, walnuts, Brazil nuts and filberts. Tart, apples, strawberries, lemons, gooseberries, currants and tomatoes, in moderation, if prepared without sugar; —— ounces of table bread a day.

Beverages.—Pure water, all table mineral waters, coffee and tea with or without cream, Rhine wine, Burgundy, claret.

You will observe that a blank space is reserved for bread allowance, which is usually filled in at three

ounces per day. Uuder the head of special instruction to the patient, directions are usually given to aim at the daily use of from 300 to 400 grams of butcher's meat, about 70 grams of fats, after which the balance of the daily ration may be filled in from the list *ad libitum*. On the third day, careful observations should be made and recorded of the following leading features: The weight of the patient as compared with that recorded three days before; the quantity of the urine; the total output of urea and sugar for the last twenty-four hours. The patient should now be kept upon practically the same lines of diet for from ten days to two weeks, observations being made and recorded of the weight, the excretion of urea and sugar every second or, at most, third day, and no specific medication whatever should be employed. Should, however, the twenty-four hours mixed urine at any time be found sugar free, the allowance of bread may be slightly increased—say to four or five ounces daily. At the end of two weeks, if the urine be not free from sugar, the above diet list is substituted by the following more strict one.

All meats, including beef, mutton, ham, bacon, poultry and game of all kinds; roasted, broiled, smoked, potted or preserved in any way except with sugar or prohibited vegetables. Sweetbreads, kidneys, heart, gizzards, tongue, brain and marrowbones. Fresh fish of all kinds, except oysters. Dried, cured or smoked fish, including codfish, haddock, herring, mackerel, salmon, crabs, lobsters, sardines, anchovies, shrimps, eels, caviar, frogs and turtles. Fats, oils (vegetable or animal), butter.

Fresh vegetables, including spinach, lettuce, cucumbers, green string beans, asparagus, cauliflower, red and white cabbage, Brussels sprouts, mushrooms, onions, cress, leeks. Preserved vegetables, including tinned asparagus, French beans, cucumbers pickled in brine or vinegar, mixed pickles, sauerkraut, chow-chow and olives.

Spices, including pepper, salt, curry, cloves, nutmeg, English mustard, parsley, dill, capers, caraway seed, laurel. Soups and broths, if clear and unmixed with bread crumbs, flour, barley, rice or cereals. Cheese, such as Neufchatel, Gorgonzola, Stilton, Brie, and so called cream cheeses. Eggs, raw or cooked in any way without admixture of flour. Nuts, such as almonds, walnuts, Brazil nuts and filberts.

Beverages.—Pure drinking water, all table mineral waters, plain or carbonated, clear or mixed with lemon or lime juice, coffee and tea with or without cream. Rhine wine, claret, Burgundy.

It will be observed that in this list bread is omitted altogether and that carbohydrates are practically eliminated from the ration. The patient is now instructed to increase the consumption of butcher's meat to from 400 to 500 grams per day; to increase his daily fat ration to 100 grams; and to take from 20 to 40 grams of alcohol daily. The same systematic series of recorded observations should be continued every second or third day, i. e., of the weight of the patient; the quantity of the urine; the output of urea and sugar.

The majority of diabetic patients will upon this course lose their glycosuria, and begin to gain in weight and strength. In such cases the further management of the case consists in readjustment of the diet, from time to time, so as to offer the patient as much variety as possible. Thus at intervals a slight increase of carbohydrates may be tried—as an ounce of bread—in order to test the toleration point for this class of foods, but in so doing constant watch must be kept over the output of urea and the presence or absence of sugar in the urine.

In the most serious form of the disease the above lines of management will often be found inadequate to totally eliminate the sugar from the urine, and moreover the patient still slowly loses weight. In such cases the diet must be practically restricted to flesh, fat and alcohol, with perhaps some green salad, as lettuce or cucumber. The daily ration should be made to conform approximately to the following features: 500 to 650 grams of butcher's meat, a pint of broth, 3 to 6 eggs, 130 to 140 grams of fat, and 40 to 60 grams of alcohol. This will furnish fully 2500 units, or calories, or slightly more. The large proportion of fats to be consumed presents, perhaps, the most difficult part of the dietary problem to be solved. This, however, becomes less difficult in most cases, if alcohol be served with the larger meals of fat. Then, too, if every opportunity be improved of working into the ration some form of fat that is found agreeable to the patient, the required amount is often very easily reached. With the view of facilitating this object I furnish my patients of this class the following list of highly fatty foods from which they can select the most agreeable forms for use:

Butter, fats and oils, cream, marrow-bones, bacon, fat part of ham, beef, mutton, pork; beef tongue, fat goose, mackerel, salmon, white fish, eels, sturgeon, sardines in oil, yolk of eggs, German sausage (Cervelatwurst), Cheddar cheese; also cream cheeses, as Stilton, Neufchatel, Stracchino, Gorgonzola, Brie. Green salads, as lettuce and cucumber, with French dressing.

The greatest skill in the management of these cases consists chiefly in the adjustment of the diet to the individual case; in other words, in so varying the proportions of proteid and fat as to suit the variable individual tolerance for each in each special case. We must in all cases aim to supply in fat and meat combined a food value equivalent to rather more than 2000 units. The average case will probably tolerate about 600 grams of meat and about 135 grams of fat, which covers the value in units aimed at. In the beginning it will frequently be found difficult to exceed 100 grams of fat, and in such cases we must try a proportionate increase of proteids until we can increase the toleration limit of fats. The latter is to be attained by judicious use of alcohol, up to 50 or 60 grams per day, served with the fat ration, and by experimenting with different forms of fatty foods until those are found that agree best with the case. The evidences of non-toleration, in other words, excess of proteids and fats, is marked by loss of appetite, sometimes vomiting, attacks of diarrhea, with gastro-intestinal catarrh. Upon the appearance of such symptoms the quantity of food must be reduced for a time and astringent alcoholics, such as claret or cognac, should be employed. Sometimes a very large supply of proteid food may seem to be tolerated, at least it does not cause any material disturbance of the stomach or bowels, but upon careful observation of the urine, a distinct augmentation of sugar excretion is noted as a consequence. In other words, it is not uncommon to find that in pushing the proteid ration to say 700 grams of meat per day, that considerable sugar appears in the urine and that if the meat be reduced to 500 grams per day, the sugar totally disappears from the urine. The explanation of this phenomenon is as follows: In the decomposition of the albumin molecule of the food in the process of digestion, a very considerable amount of carbohydrate is liberated therefrom—at least 35 per cent. of the albumin by weight. So long as the system is able to utilize all the carbohydrate resulting from the cleavage of the albumin ingested, the proteid ration is below the metabolic toleration point and the urine remains free from sugar; but so soon

as this is exceeded the toleration point is passed, even though the stomach may be able to retain more with comfort, and sugar appears in the urine.

It is impossible within the necessary limits of this paper to do more than outline the main features of this subject. The details, if more minutely followed, would occupy altogether more time and space than are at my present disposal. It may, however, be stated in conclusion, that the careful adjustment of the foregoing ration to the daily life of the diabetic patient with comfort and complete toleration, in accordance with the principles laid down, so as to maintain a perfect balance of metabolism, constitutes the highest skill attainable in the dietetic treatment of diabetes. It also probably marks the present zenith line of our dietetic resources in this disease.

SUGGESTIONS ON THE LIMITATIONS AND TREATMENT OF JUVENILE CRIMINALS.

Presented to the Section on State Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY DANIEL R. BROWER, A.M., M.D., LL.D.

Professor of Mental Diseases, Materia Medica and Therapeutics, Rush Medical College; Professor of Nervous Diseases Woman's Medical College, Northwestern University.

CHICAGO, ILL.

The growth of the criminal class is nearly three times greater than the growth of the population. Such is a reasonable deduction from the publication of the Eleventh Census of the United States, and this blot on our civilization demands treatment.

It is a great question—one that can not be settled by the courts and the church. It contains within it many problems that can only be solved by the wise physician. Crime has a physical basis; biologic conditions are directly and indirectly important factors in determining human action. Conditions more or less pathologic exercise a most important rôle in the production of crime. It requires but a glance at the inmates of a reformatory or penitentiary to satisfy oneself that criminals are physically inferior, exhibiting on every side stigmata of degeneracy. They have features that differentiate them from their more fortunate brethren. They come into the world—at least 30 per cent. of them—with an inheritance that they could no more overcome than they could the course of the sun, and, combined with this vicious inheritance, there has been a no less bad development in the midst of ignorance, poverty, and crime. Our jails are the nurseries of crime. The juvenile offenders here receive valuable lessons in crime; how to do it most skillfully and with the least danger of detection; and when their time of release comes they go out much better equipped to follow their occupation successfully.

Morrison, in his admirable work on "Juvenile Offenders," establishes, beyond contradiction, the following four important propositions: 1, that the death-rate among juvenile offenders is higher than among the general population; 2, that they have sprung from short-lived parents; 3, that their average stature is three to four inches lower, and their weight 30 per cent. less than children of the same age in the general population; 4, that their mental capacity is much below normal. These propositions establish the fact that the juvenile offenders are degenerates, and, if so, the repressive agencies in the shape of prisons and police are altogether inadequate to cure them.

In order to limit those criminals, society must stop their propagation. Dougdale found in the "Juke" family 1,200 criminals and paupers as the output of one vicious ancestor in seven generations. McCulloch found 1,750 criminals and paupers in six generations as the progeny of "Ben Ishmael," and these cases are by no means exceptional. We must have, therefore, laws regulating marriages, and, in formulating such laws, we must remember the close relation between alcoholism, other forms of inebriety, venereal diseases, and degeneracy. We must, however, bear in mind the fact that the subjects of insanity, epilepsy, and tuberculosis are all alike accompanied by such marked involvement of the nervous system that their progeny are usually inferior physically, and hence liable to drift into this large and rapidly growing class.

The marriage license, in addition to present requirements, should demand evidence that both parties are in good health, that they are not inebriates, not epileptic, not tuberculous, not insane, not criminals, not paupers, and that they have no active venereal disease. The limitation, moreover, demands that the children of vicious parentage be speedily identified and taken from their bad environments before they become criminals; placed in charge of suitable custodians, to be appointed by the courts; and when properly educated and trained in some useful employment, they be given a reasonable capital with which to begin life, unless it shall be found by competent medical authority that they are incorrigible—and then they should be permanently secluded.

The juvenile criminal should not be placed in a common jail when arrested, for in this nursery of crime his malevolent tendency will simply be more fully developed, and, if he is an accidental transgressor, it is most reprehensible to brand him as a "jail bird," for, with this added stigma, his reformation will be made more difficult. Special provision should be made for him while waiting trial, so that the good, rather than evil, that is in him may be developed. If convicted, he should be sent to a reform school, where his physical, normal, and intellectual powers will receive proper development, where he will be taught some useful occupation that will, in after life, give him a reasonable means of livelihood; where he will receive such attention from a physician versed in criminal anthropology as his condition requires, and who will assist ultimately in determining the question of his curability, or incorrigibility. When he has been cured, he should be discharged and given a reasonable sum of money, as a capital with which to maintain himself until he can make a start in his legitimate life work. This scheme for the treatment of juvenile offenders is no dream, but is a realization in "Darkest Russia."

This plan is now, and has been, in successful use for many years in Moscow, and our reformatories at Pontiac, Ill., and Elmira, N.Y., are steps in the same direction. The treatment of criminals is just as illogical today as was the treatment of the insane one hundred years ago, and the reform must come through the beneficent influence of the self-sacrificing and philanthropic members of this great medical association.

Let us have a Department of Public Health!

STATE REGULATION OF MARRIAGE FOR THE PREVENTION OF COMMUNICABLE AND HEREDITARY DISEASES.

Presented to the Section on State Medicine at the Forty ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ALBERT H. BURR, PH.D., M.D.

ADJUNCT PROFESSOR PRACTICE OF MEDICINE, COLLEGE OF PHYSICIANS AND SURGEONS; ATTENDING PHYSICIAN TO PROVIDENT HOSPITAL. CHICAGO.

Society as constituted under whatever form of government is more or less incomplete in its organization. Evolution, here as elsewhere, is working out the destiny of social affairs. New sociologic problems arise with every advance in our commercial relations, our manufacturing interests and our knowledge of the useful arts and sciences. Especially is this true as it relates to the causes and prevention of diseases. A fundamental principle, recognized by the earliest patriarchial, tribal and feudal forms of society, up to the highest development of representative governments, is the right of the individual to protection against physical harm from his enemies. It is only an elaboration of this principle which makes it the business of the State to do for the mass of individuals, for the good of society, what can not be done or so well done by the individuals themselves.

In return for this protection and share in the general prosperity of the whole, the individual is called upon to make many personal sacrifices. He must "keep off the grass," *pro bono publico*, in many localities as he travels through the experiences of life. Although their operations may work hardships at times to particular individuals, nevertheless sanitary, hygienic and quarantine regulations for the protection of the public health are widely acknowledged to be measures of the highest wisdom. The public is easily aroused to the dangers of epidemics like cholera, yellow fever and smallpox, and submits to wise regulations for the prevention or stamping out of these fearful scourges. The sudden onset, rapid spread and swift destruction to life invest these diseases with a tragic interest that on occasion alarms the public, paralyzes local industry and commerce, and engages public attention often beyond the gravity of the situation. No expenditure of means or measures is counted too great on the part of governments in order to protect their subjects from such diseases. Happily, the frequency and force of these scourges have been greatly reduced in civilized countries, for they have been almost shorn of their terrors through vaccination, quarantine and hygienic regulations.

Alive to these great dangers, as we should be, vigilant for their suppression with the financial, legislative and executive resources of the State, as we are, what is our attitude toward other infectious diseases, whose sources are equally well or better known, and whose methods of contamination are constantly demonstrated on every hand—diseases whose endemic presence is perennial, whose ravages are greater because of their constant, silent and concealed operations? If the epidemics we have just mentioned may slay their hundreds or thousands on occasional outbreaks, the preventable diseases like gonorrhea, syphilis and tuberculosis are slaying annually their hundreds of thousands. The State is opposing the ravages of this class of diseases with feeble barriers, or none at all. The public is obtuse and indifferent, because their devastations are not matters of sensational newspaper reports and do not come with the tragic effect of sudden onset and swift destruction. The masses are ignorant concerning the gravity of these diseases, or any adequate means of limiting or preventing their transmission.

Every measure in this direction which is wise in its provisions should have the hearty support of the medical profession. Indeed, it is through our profession alone that a knowledge of the extent and ravages of these diseases can be imparted and means for their prevention pointed out. In this paper we wish to discuss but one of many prophylactic measures which we believe would prevent much injury and death, and would protect many innocent wives and children who suffer most cruelly from communicable diseases by direct contact or by heredity.

We earnestly advocate more stringent laws regulating matrimony. We believe the public good demands that every candidate presenting himself or herself for license to marry should be required to file a certificate of health from a legally qualified examining physician, showing freedom from hereditary diseases, like insanity or epilepsy, from all active tubercular infections, and from communicable venereal diseases.

All individuals entering the bonds of wedlock have a right to know that their own bodies shall not be contaminated through this relation by reason of already existing disease or taint. They have a right to know that their progeny shall not be the victims of hereditary diseases or direct contamination from the same source. Every child has the inalienable right to be well-born, at least, if not born a thoroughbred. Who can safeguard these rights but the State? In these days of physical degeneracy among the highly civilized nations matrimony is governed more by questions of mere sentiment, finance or expediency than by a consideration of physical, mental or moral fitness. If in human breeding we ignore the simplest rules of those who breed physical perfection in horses, cattle, pigs and poultry, it should, at any rate, be obligatory on the part of the State to protect the lives and health of those who are helpless to protect themselves. The least it can do is to prevent the diseased from contaminating the healthy and innocent through the license to marry.

Legal restrictions placed on our statute books with this end in view would work hardship to no one who has a moral right to marry. Such legislation would be of immense benefit as a means of public education concerning the prevalence of these dangerous maladies and the frequency of their distribution to innocent, unsuspecting wives and their helpless babes. They would become topics for discussion in every home where a marriage was prospective. The public would very soon inquire into the reasons for such legislation. It would learn the truths concerning evils which the profession knows full well, but upon which it is powerless to give public instruction, and against which, unaided by law, it is powerless to enforce protective measures.

The laity would soon come to know what Noeggerath and Ricord taught many years ago: that the majority of all males become gonorrheic usually *before* matrimony, and that a large proportion of these remain in uncured chronic or latent stages for indefinite periods, during which they can impart this dangerous disease to others; that 10 to 30 per cent. of all females become gonorrheic usually *after* matrimony, and that the results are usually of much graver

importance to women than to men; that gonorrhea is accountable for most of women's pelvic woes; that it is the greatest cause of sterility in both sexes (Keherer); that it is the greatest single cause of blindness—18.5 to 23.5 per cent. of all the blind in early life being from this cause alone (Magnus, Fuchs and Lucius Howe); that it often kills and that from this cause alone a license to marry may also prove a death-warrant to a confiding bride. The laity would soon come to know that syphilis, of all diseases, is the greatest cause of abortion; that one-third of all syphilitic pregnancies abort or are still-born; that one-third of those born alive die during the first six months (Carpenter and Grassowitz); that the remainder are more or less enfeebled, deformed or short-lived through lowered vital resistance; that locomotor ataxia and certain forms of insanity are almost synonymous with so-called tertiary syphilis. The laity would soon come to know that the great white plague of consumption is the king of death among all diseases, cutting down from one-seventh to one-ninth of the human race; that it is propagated through the marriage of tuberculous individuals; that the progeny of such inherit weak constitutions and a marked tendency to contract the same disease. The laity would soon come to know that persons tainted by mental and nervous derangements, like insanity, chronic alcoholism, dipsomania and epilepsy, are very liable to beget a progeny of physical, mental and moral degenerates through a license to marry. It would learn that all these classes of diseases thrust upon the State a great burden of caring for the diseased, the defectives and the criminals that largely fill our asylums, poorhouses and jails; that the State has not only the right to protect the immediate interests of the individual, but its own interests also by preventing the marriage of those who might be inimical to private and public welfare.

With such widespread knowledge a strong conviction would prevail that the diseased and defectives have no business to marry. It would be regarded as a crime for these classes of individals to marry, and the demand would be imperative on the part of the public that effective, discriminating laws regarding license to marry must be enforced for the public good.

The vital importance of matrimony to organized society makes it obligatory on the part of the State to impose few barriers to its free exercise. "Matrimony is the restraining power which keeps society decent, to say nothing of the higher blessings which flow from it." (Bishop.) Again, Ayliffe declares, "As the first cause and reason of matrimony ought to be the design of having offspring, so the second reason ought to be the avoidance of fornication." Manifestly the largest exercise of the institution of marriage—so essential to the highest good of society—should be encouraged between all persons qualified for this duty. But it seems to us equally evident that the State is under just as strong obligations to protect its subjects from the dangers of communicable and hereditary diseases on entering marriage, by requiring candidates to pass efficient medical inspection before granting to them the privileges and responsibilities of this important civil relation.

So far, restrictions against marriage in the United States have been confined to questions concerning minority, consanguinity and micegenation. Attempts have been made to pass bills in some States to regulate the granting of marriage licenses with respect to the prevention of disease. None have become statutory law so far as we have been able to learn.

Having shown conclusively, as we believe, the urgent need of wise legislation in this matter, the following working model of a bill is submitted by the author, for the drafting of which he is largely indebted to Dr. Frank W. Reilly, assistant health commissioner of Chicago, whose ripe judgment and experience in securing medical and sanitary legislation, and whose long connection with the Illinois State Board of Health eminently qualifies him to pass upon what may reasonably be expected of legislators in this connection. While this bill does not cover all that has been set forth as desirable, it involves the more important considerations, and if attainable will mark an advance which, let us hope, with enlightened public sentiment, may yet reach the higher ideals outlined in this paper:

A BILL

FOR AN ACT TO REVISE THE LAW IN RELATION TO MARRIAGE.

SECTION 1.—*Be it enacted*, by the . . . of the State of . . . That it shall hereafter be unlawful to issue a license to marry to any applicant for such license who fails to present with his application a certificate, as hereinafter provided, setting forth that the applicant is not the subject of acute or latent gonorrhea, or syphilis in the communicable stages.

SEC. 2.—The certificate required shall be accepted from any reputable physician who is a member in good standing of the National, State, County, City or other similar recognized medical organization of the school of practice to which he or she belongs, and shall be in form and substance as follows, to-wit:

State of . . . . }
County of . . . }

I . . . M.D., a legally qualified physician and member in good standing of the . . . whereof . . . M.D., (Address . . .) is Secretary, do hereby certify that I have examined . . . resident of . . . an intending applicant for license to marry, and that my examination, made with due skill and thoroughness, and during a sufficient period of time, fully satisfied my professional judgment that said intending applicant is not the subject of any of the disqualifications for marriage specified in Sec. 1 of the Act to revise the law in relation to marriages, approved . . . 189 . , in force . . . 189 .

I do, hereby, further certify that this certificate is given with a full realization of the sufferings entailed upon wives and offspring by marriages with the subjects of said disqualifications.

Witness my hand this . . . . day of . . . . . 189 .
. . . . . M.D.
Address . . . . . .

SEC. 3.—The physician's certificate shall be dealt with in the same manner, as to registry, endorsement and preservation, as is now prescribed for the certificate of marriage.

SEC. 4.—All acts or parts of acts inconsistent, or in conflict, with this act are hereby repealed, and this act shall take effect and be in force from and after its passage.

ARTIFICIAL RESPIRATION IN RELATION TO STATE MEDICINE.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY EDWARD DAVIES McDANIEL, A.M., MD., LL.D.
MOBILE, ALA.

The purpose of State medicine is the protection of the life of aggregated man from injury and death. This purpose is mainly accomplished by protection from the causes of injury and death by preventing, avoiding or removing such causes and mitigating or curing their effects. As the whole must always include all its parts, so aggregated, nationalized, communized man must include its every constituent individual, and state medicine in its mission must embrace the warding off from each and every individual the causes that may imperil, impair or destroy the life of that individual. Life need not here be defined. Its existence is postulated. It is equally known that life exists in two states—the *latent* and the *manifest*. The latent is a dormant, germinal, quasi-hybernant state, with a capacity of being developed or aroused under proper influences into the manifest state char-

acterized by a display of definite aggregated and correlated processes and phenomena. These processes and phenomena, once developed, become the characteristic properties of life, the manifestations by and through which alone its existence is known and revealed to us. What these processes and manifestations are need not be here mentioned in detail, since they were enumerated in a paper entitled "The Relation of Physiologic Principles to Artificial Respiration," presented to the Section on Physiology and Dietetics, at the meeting in Philadelphia, Pa., June 4, 1897, and since published in the JOURNAL. In the same paper may be found enumerated the leading conditions of depressed life with their causes and treatment. As the leading process of human life after birth is respiration, so the leading measure for restoring life from dangerously interrupted or prolonged depressed conditions is artificial respiration with its appropriate preparations and adjuvants.

Connected with the value and importance of artificial respiration to State medicine, a very interesting practical and important question presents itself, viz.: How long may respiration be interrupted, suppressed or in abeyance and yet a reasonable hope of its restoration still be entertained?

From the most reliable sources of information at command, and covering the period of sixty years are presented the following statements:

Tanner, in his "Clinical Medicine," says: "Death is said to be the result where breathing is interrupted for any more than *three minutes*."

In a report of a committee of the Royal Humane Society of Great Britain with the very distinguished Sir Benjamin Brodie for chairman, in 1840, it is stated that "It is the opinion of the medical members of the committee, that the period, in cases of asphyxia, when artificial respiration might be successful is *very short and scarcely more than momentary*." In 1744 there was published, in Edinburg, a case of a man apparently dead from suffocation in a coal mine. "Mr. Topack used insufflation, mouth to mouth, bled him, caused him to be pushed, pulled and rubbed, as much as he could *for about an hour* when he *began* to come to himself." In the *Medical Gazette* (English), quoted by Dr. Howard of Baltimore, Md., Mr. Terry of Northampton gives "two cases of still-birth in which after nearly two hours he succeeded by breathing into the nostril and alternately compressing the chest." Dr. Howard also gives a case of three days' labor, in a primipara, in which a seven months' fetus was expelled *with every sign of life absent*. After the application of conjoined methods of artificial respiration for about *twenty minutes*, the child *began* to breathe. The cord was then cut and perfect health continued. Another case is given—one of a man who fell from a Staten Island steamboat. "About *twenty minutes* after the man fell from the bulwark rail into the bay, the boat backed and the man was hauled on deck *with no sign of life remaining*. Artificial respiration was commenced and in *about ten minutes* the patient gave a short gasp. The treatment was continued and in about *ten minutes more* he breathed naturally and exhibited consciousness." In this case you observe it was *thirty minutes* from the arrest of breathing to the inception of its return as indicated by the short gasp, and *forty minutes* to its full restoration.

Dr. Hamilton of Falkirk, in the *Monthly Journal of Medicine*, May, 1855, reported the following case, which proves that many infants apparently dead, may be aroused to manifest life by means of artificial respiration long after the time when the effort is ordinarily abandoned.

About ten minutes before 7 P.M., Mrs. C. was delivered of a large male child. A knee presented, and to effect delivery considerable force was required. Even before one leg had passed from the vagina, meconium was voided very copiously and when the child was born it showed not the slightest trace of movement or of sensibility. The usual appliances of rubbing the breast with spirits, plunging the body alternately into cold and warm water, etc., were had recourse to, but apparently without effect. As a last resource artificial respiration was employed. In a short time a slight pulsation of the heart became perceptible and gradually increased in strength, but this was the only motion that could be observed. After having continued the artificial respiration for *an hour and a half*, a slight tremulous motion of the abdomen was noticed, which at first seemed to be merely the effect of the heart's motion propagated downward, but which after *another half hour* was distinctly seen to be produced by very weak and rapid respiratory movements. Along with this improvement, the color of the lips, previously somewhat livid, became of a red natural hue. In *three hours* the temperature was good, the pulsation of the heart was strong and the respiratory motions extended to the upper part of the chest.

In the London *Lancet* of Feb. 14, 1846, is an account of a case that occurred to Dr. Mackness of Hastings.

On his arrival the doctor was informed that the labor was over and that it had been over *ten or fifteen minutes*. He broke the membranes of an entire ovum which he found, tied the cord and gave the child to an attendant, when to his surprise he found another ovum, also entire, from which he extracted another infant. Both infants appeared to be still-born, but by inflating the lungs, dashing cold water over their bodies, wiping them dry and having their skins well rubbed, in *about fifteen or twenty minutes*, both showed signs of animation and on expesure to warmth, cried out lustily. In each of these cases an interval of probably *not less than twenty five nor more than thirty five minutes* transpired from the complete expulsion of the fetus to the first show of signs of animation.

In Camden, Ala., on Feb. 25, 1859, after a copious bloodletting practised on a primipara to prevent convulsions that were imminent, a large male fetus was very tediously passed through a relatively small and rigid outlet. It was apneic and apparently dead. Heart movements were imperceptible, but there was more firmness in the flesh of the fetus than is usually found in that of the dead. After trial and failure of Hall's ready method, persistent insufflations mouth to mouth, with warm cerebro spinal bath, cold sprinklings and dry frictions, were finally followed, *after twenty or more minutes*, by spasmodic contraction of the fetal hands and then a sudden gasp. Life signs improved gradually and in about an hour from the complete expulsion of the fetus, respiration seemed good, the cord was cut, the child dressed and I, with two other physicians in attendance, withdrew to another room. After a few minutes I was hurriedly summoned back with the alarm that the infant had stopped breathing. Insufflation was again practised with very tardy but ultimate apparently complete success. After again retiring and remaining for some time in the other room, I was called again to the breathless infant. Insufflation again succeeded. Apnea again occurred. More forcible insufflation was applied, and breathing once more returned, but with it there came a straining cough which persisted until a sudden copious rush of blood through the mouth and nose terminated the infant's life, *four hours and twenty minutes* after its expulsion from the mother and only a few seconds after the last insufflation.

It is perhaps fair to say that in Great Britain and the United States the most cautious conservative medical men, though once in accord with those who limit the capacity of life in adults to a compass of from two to four minutes after the cessation of breathing, are now converted to a more liberal creed. It is known that breathing may be voluntarily "held" for varying times, that practice may extend the time considerably; and that pearl divers and expert divers may safely reach *four minutes* or even *more*. Newspaper reports of executions by hanging and physicians legally detailed to witness such executions, agree that the pulse continues to beat for from five

to fifteen or more minutes after the rope stops the breathing, the average being about ten minutes.

We have not time to dwell at more length on cases, details and results, but feel warranted in stating: 1. That the length of time that adults may be apparently breathless and yet susceptible of resuscitation is not definitely fixed—that it doubtless varies greatly in different cases, is greater than it is generally supposed to be—perhaps, in certain cases, much greater. 2. That the length of time that a fetus may, on its first passage from the mother, remain without visible pulmonary respiration and yet continue susceptible of being saved is very much greater than the corresponding time in the adult; that it is probably greater in the premature fetus than in the fetus of full term and that in the premature fetus, when kept warm, the heart may continue to act *four hours or more*, without any connection with the mother and without visible pulmonary respiration.

It must now be plain to all that such life-saving organizations as go far off on the high seas or great lakes, on the great ships and fleets, or watch out for the lighthouses and mist-covered shore, are not the ones from which State medicine must expect its greatest good and its greatest gain, but contrarywise, the skilful obstetricians, who cease not by day or by night, in summer or winter, in metropolis or in wilderness, on sea or on land, on the mountains and in the vales, in king's houses or in huts, in calm and in storm, to await the coming of helpless, breathless, speechless ones from the home of a lower life to the danger-beset shores of a higher existence—these are they who must ever furnish to State medicine the greatest and best contributions.

How *many* lives may reasonably be expected to be saved to the State by artificial respiration can never be exactly computed; very much must depend upon the safety, certainty and efficiency of the method used; upon the seasonableness and skilfulness with which it is used, and upon emergencies that vary with times, places, events, enterprises, accidents, etc. But a reasonably approximate estimate can be reached when and where conditions approach uniformity. Say that Alabama has a population of two millions and has two thousand physicians, and that each physician annually resuscitates by artificial respiration, mainly, only two cases, not spontaneously recoverable, the number saved in the State will reach four thousand, and at a like rate the saving to the seventy-five million of the United States would amount to one hundred thousand per year.

But in estimating the worth of artificial respiration to the State or to the world the *number* of the lives saved is a far smaller consideration than their *value*. This value can not be comprehended. It can only be thought of in overpowering amazement. The saving of some lives, as those of the insane, the degenerate and the criminal, would be a calamity to the State, but for the warning thus given against the transgression and the occasions furnished for the exhibition and exercise of humanity, of compassion, of beneficence and of justice. But others of those saved, and no doubt most of them, are reserved for higher and nobler destinies. Moses was saved in a frail ark of bulrushes to become the leader, liberator and law-giver of his own oppressed race, and through them of all civilized races. Noah was floated in an ark, from a deep flood to a lofty mountain top, to become the ancestor of races destined to repeople an inundated, depopulated world. Alexander Pope was born a weakly, deformed, dwarfed infant. In tender childhood he received, from a vicious cow, injuries from which kindly care restored him; and still later, locked up in a coach that was overturned in a river, he was rescued from otherwise inevitable drowning, by the timely aid of a helping hand. Through such perils, exposures and sufferings was he spared, whose mission it was to translate into English the two greatest epics of Greece and Rome, and otherwise wonderfully to enrich that ever expanding language which many of us now proudly claim as our glorious vernacular. Isaac Newton, when born, was small enough to be placed in a quart cup, yet that diminutive body contained the germ of that wonderful genius who discovered, explained and applied to countless uses and purposes the great law of universal gravitation; who invented and largely developed some of the highest departments and best methods of modern mathematics, and who gave the first great impulse and start to the study and knowledge of light—that great agent that ceaselessly sheds and will shed its bright, beautifying, life-exciting influence through infinite space, boundless stretches and infinite duration's endless years.

Thus to those snatched from the dark valley of the shadow of death by life-saving measures, and especially to the multitudes of apneic infants recoverable only by the aid of artificial respiration and to the descendants of such, the State, through all coming ages, may reasonably look for many of her greatest, brightest, best and most valuable citizens—her astronomers, navigators, discoverers, inventors, educators, patriots, evangelists, prophets, apostles and redeemers.

THE ADMINISTRATION OF SANITARY LAWS.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WM. P. MUNN, M.D.
COMMISSIONER OF HEALTH.
DENVER, COLO.

The complicated relations existing in most municipal governments between the different departments and bureaus seem to make it essential that the health department, bureau or board should have a legal advisor of its own. Take, for example, a city in which, as in Denver, the boards and officers comprising the various divisions and sub-divisions of the executive force are appointed by different officers, and own no allegiance to a single and responsible head. It can readily be seen how it happens, as it often does, that one department seeks to carry out a plan of action, which in some particulars will conflict with the regulations and activities of another department, and there is no ready method of harmonizing and unifying the efforts of the departments. For example, in most, and perhaps in all cities, the construction of sanitary sewers, or of a waterworks system would devolve upon the officers having charge of public works. Having a regard for other essential matters than sanitary features such an officer may go on and construct a sewer system or waterworks in such a manner as to jeopardize the sanitary interests of the community. The responsible officer of health may not be apprised of what is in contemplation, or he may learn of it in some round-about way. But unless he is consulted

and can give the matter the full attention that it deserves from his point of view, conditions may be brought into existence which he may subsequently find it necessary to remedy but will not have the power to act upon.

Under such circumstances a legal adviser who has given especial attention to the right of the sanitary or health board may keep the health officer advised of his opportunities and his dulies, and enable him to accomplish much good for the community both before, during and subsequent to the construction of municipal improvements. I take it that such a special counsel would advise the health officer when he can effectually make his objection and formulate his protest against "public improvement" measures that are unsanitary. But in instances where one counsel acts for all city officers, the city attorney is much more likely to look at matters simply from the standpoint of the board that desires to hasten work along and will so frame their advertisements, phrase their stipulations and arrange their contracts that objections made from a sanitary standpoint will not be properly presented, or when considered will not be agreed to.

Let us consider, for example, a proposed system of water-supply for a city. An intelligent head of a public works department would be largely guided by the results of thorough investigations of health officers in determining whether a certain source was, or was not, free from objection. But an unintelligent works official would probably have, under the laws of most cities, a right to proceed without consulting his health officer, and in no instance do I know of any city where the works department is required by law to comply with the recommendations of the health officer upon this important subject.

A majority of cities are sewered by the combined system, and communities must wait until their growth has reached such a point as to enable them to incur the expense of a combined storm and sanitary sewer system before ordinary sanitary drainage can be provided for. This fact accounts for the long existence of the privy pit and cesspool nuisance in cities. The intelligent health officer, backed or assisted by an attorney who is retained by the sanitary officer alone, will be enabled to have separate sanitary sewer systems constructed early in the growth of a city. Thus the sanitary sewer will be laid before a district is closely built up and before many privies or cesspools have been constructed. New residences going up in the completed sewer district can then be required to at once connect with the sewer, and the soil of the city will never be given an opportunity to become saturated with filth and disease-producing materials. This is simply a preliminary point, however. The relation of the sanitary administration to the administration or alleged administration of justice in any community, is a matter of vital import to the earnest health officer.

Prior to bringing any case in court it is the business of the health office to exhaust every effort to persuade the offending citizen to comply with the regulations. It is an old saying that more flies can be caught by sugar than by vinegar. Apply the principle of that wise saw to the enforcement of sanitary regulations. One person can be influenced by an appeal to his reason, another by an appeal to his pride, either in his own property or in the general neighborhood in which he lives; others are led to comply with orders by showing them how much more desirable their property can be made from a financial or earning standpoint; others can be cajoled into doing a thing in a certain time which they absolutely refuse to do at the immediate date of the order. But when these classes are exhausted there remain two others that must eventually be brought into court. There is the man who thinks he can always beg off and that you will never carry out the threat of court procedures, and there is the man who is a born fighter and will not yield until he has gone through all the courts. Men of the first sub-class usually come into court when summoned and promise to proceed immediately if no penalty is imposed. It may be well to allow them to go without a fine, but in every instance they should be made to pay the costs. Then if the court is a fairly intelligent friend of sanitary measures he should be asked to warn the offender that the next failure to comply with orders will be punished by a full fine. This promise, if made, should be kept.

In dealing with the class which includes the persistent and obstinate fighter, it is well for the health officer to exhaust every peaceful method before going into court. When it is finally determined that prosecution is necessary it is wise to have the preparations made therefor with the greatest care and under the direct instructions of the attorney who will prosecute the case. First, second and third notices should be carefully drawn up in accord with the strictest technical requirements of the law; the exact manner of enactment of the regulation or ordinance should be looked up so as to assure yourself that it has been lawfully adopted; it should be possible to produce the original act, ordinance or regulation in court if a demand is made for its exhibition; copies of the notices as served should be substantiated by more than one witness; the ownership or control of the property in question should be fully established and not taken upon hearsay; the case should, if possible, not rest solely upon the testimony of employes of the sanitary service, but other citizens should be called to substantiate their evidence; a nuisance should be proven by citizens and by a recital of conditions which will satisfy the court, not by the simple statement or order that "such a thing or condition is a nuisance." It has been my experience that judges of minor courts are more ready to accept common-sense definitions, and to brush aside mere technical objections, than are the judges of superior courts. It has also been my experience that it is easier to win a case before a jury in a district or common pleas court than it is to win before a judge. In common with many other officers, it has been my lot to lose important cases as well as to win them. A recital of some causes of failure may be of service to others, as the cases themselves have been to me, in pointing out certain defects of procedure that result in the loss of a case.

In a prosecution for the sale of watered milk, in one instance, the proof of sale of any portion of the milk was carelessly overlooked; its possession, its carriage and its delivery were proven, but not its sale. The case was dismissed for lack of proof, although the guilt of the accused was morally certain both to the judge and myself. In a prosecution for maintaining a nuisance in the shape of a privy vault in a completed-sewer district, action was brought by an attorney unfamiliar with the ordinances under one section which prohibited such vaults in completed-sewer districts as nuisances, but the substantial proof

that the particular vault was a nuisance was not presented and the case was therefore dismissed. In a prosecution for selling impure ice the party was convicted in the police magistrate's court. From this decision and fine he appealed to the county court, where he was again convicted by a jury. In order to hasten matters and avoid long drawn-out litigation an order was then issued, after a hearing, that the complained-of ice would be destroyed if brought into the city for sale. Upon this the culprit managed to have three judges of different courts intervene with orders and injunctions preventing not only the destruction of the ice, but further prosecutions under the ordinance which had secured his previous convictions. These orders were based upon perjured statements of the attorney that no hearing had been given; inasmuch as the previous hearings were not of record, the falsehood could not be disproved, the uninformed judges of appeals made a ridiculous decision to the effect that "a health commissioner had no right to issue an order to destroy property." All of which may be good law but is bad reasoning from the standpoint of a common-sense sanitarian. Judges are not well informed upon matters relating to sanitation which come before them for decision. Worse than this is the fact that from the peculiar bent of mind acquired by long legal training, they seem to have reached a point where they hold that no other consideration is of quite so much importance as the preservation of alleged property rights, even when such alleged rights violate the inherent right of the people to live out their individual lives. It is my firm impression that sanitary laws can never be properly enforced until a more rigorous method of putting intelligent and conscientious men upon the bench can be devised.

MELANCHOLIA.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY FRANK PARSONS NORBURY, M.D.

Lecturer on Psycho-Physics Illinois College; Neurologist to Our Savior's Hospital; Physician to Oak Lawn Retreat.

JACKSONVILLE, ILL.

The physiologic doctrine of the physical basis of mind is now established beyond dispute, although some of the ardent philosophers of the Platonic school still regard mind as an entity, and view it and consider it apart from its habitat—the brain.

This change in physiologic views has been brought about by the advent of physical methods of inquiry, which, under the name of the new psychology, promises to give us a substantial and real basis from which we may proceed in our excursion into the labyrinths of reason. The bearings of psycho-physics upon the study of mind, together with the empiric observations of the past ages, demonstrate that physiologic laws underlie mental phenomena—that mind reposes upon a nervous property sustained, like every other physical power, by nutrition. It shows, further, that the plasticity of the mind may be impaired in its full functioning by innutrition or malnutrition as well as from undue exercise or its reverse—inaction. Again, we have learned that mind, physiologically considered, is dependent upon bodily conditions for its full powers. Bain, in his excellent work on "Education as a Science," in 1878, expressed this one physiologic circumstance in particular in the following words: "The human body is a great aggregate of organs or interests—digestion, respiration, muscles, senses, brain. When fatigue overtakes it, the organs generally suffer; when renovation has set in, the organs are generally invigorated. This is the first and most obvious consequence, and therefore, in order to increase the plastic property of the mind you must nourish the body."

We who have studied the phenomena of the mind from the standpoint of disease will recognize the physical basis of mind, and to us mind is the consequence of a long line of new nervous growths—the morphologic development of the senses, the intellect. the emotions and the will. The nervous system is the instrument of the mind—this is the belief which the new psychology has demonstrated to be true. Herbert Spencer, before the advent of the new psycho-physics, said; "The evidence, though so indirect, is so extensive, so varied and so congruous, that we may accept the conclusion without hesitation." Now, the phenomena of the nervous system, viz., its mechanism, functions and condition of action, etc., are purely physical phenomena, controlled by physical or physiologic laws, just the same as are the processes of digestion, circulation, etc. Mind, too, is controlled by physical laws, for while we can not demonstrate the substance of mind, in fact, as Weir Mitchell expresses it: "Indeed, we are as yet uncertain as to where within the skull is the nerve matter with which we think or imagine." ("Clinical Lessons in Nerve Disease.") However, it is to be presumed that mind is identical with other evidences of nervous phenomena, as it is closely associated with nervous change.

In my classes, I have taught that mind is made up of an association of feelings—a confederation of units of feelings. This is in line with the teachings of pathology, as our science of cerebral localization demonstrates. Again, it is in keeping with the teachings of the cellular pathology of Virchow, and with the modern concept of the neuron theory.

In the clinical study of mind it has long been recognized that proper nutrition of the brain is the prime essential of recovery. Especially is this true in melancholia, which, viewed in the light of modern neuropathology, in my judgment, gives us a physical basis from which to consider this disease as a nutritive disorder, of which the mental symptoms play the title rôle, while the accompanying physical symptoms are none the less important, though more or less obscured by the greater conspicuity of disordered mind. The mental phenomena should not be regarded as the disease, any more than the sugar in the urine should be considered as the disease, diabetes. Even the transitory or periodical forms of melancholia, some of which are spoken of by Weir Mitchell, I believe, are the results of innutrition and when we know more of neuron metabolism we will have their physical basis known.

Barker of Johns Hopkins has contributed a most excellent series of papers in the study of the neuron (*New York Medical Journal*), and in a recent paper says, in regard to the laws underlying neuron metabolism, that they are just as fixed and constant as are those of astronomy and botany, and he can conceive of a knowledge of their nature and action which would enable one possessed of it to prophesy unerringly of the functional manifestations of a nervous system made of a given set of neurons, which must result

upon exposure to a given environment. Further, he says: "The neurologist has already learned that in the nervous system certain causes produce certain definite effects, almost with mathematical accuracy, and this fact should encourage him to further research with the hope that the intricate laws in question may gradually be rendered less obscure and vague."

Defective metabolism, then, is the foundation of melancholia, and this is further borne out by operation of the impoverished body, the attenuated action of the nerve-currents, the defective blood, and other evidences showing a diminished, weakened, impaired bodily nutrition. The mental alteration is but the result of lowered nutrition of the brain, as the phenomena of conduct, of intellect, of will and of consciousness itself, one and all are dependent upon a high degree of activity in the nerve elements. The adjustment of mind to the material body lies then along the lines of bodily nutrition. Of course, we must consider the hereditary factor, where, because of minute conditions, the natural energy of the mental organization is limited, or is so unstable as to be affected, then because of the lack of nerve or background to counterbalance extraordinary demands on the available energy, we find early exhaustion and consequential mental anarchy. The nerve elements in such a case are essentially weakly-developed or badly nourished, either of which conditions disturbs the organized associations of centers and permits of speedy exhaustion, and loss of power over thought, feeling, conduct and consciousness. The natural motor restraints or inhibitions are impaired or abolished. Thought-circuits are disturbed, broken or so seemingly locked, that in spite of all efforts the patient can not rid himself of the morbid gloom, which such self-centered, grossly exaggerated thought engenders. The true self fights invading insane self and finally gives up the struggle as vain, and soon is swayed by his delusions and imaginings; will is disintegrated and the other ordinary higher psychical impulses encompassed by the darkening and impervious gloom.

To me this picture is one painted by distorted nutrition, more or less aggravated by the inherent factor in the case. Clinically, melancholia is more than Ziehen (*Am. Jour. of Insanity*) states in his trio of etilogic factors, viz.: hereditary taint, stress and mental shock, for malnutrition is decidedly a primary factor more or less prominent in every case, and should be added to make an etologic quartet.

While it is true that we meet cases of simple melancholia without much physical disorder, yet I regard physical disease as playing more than a subordinate part in the causation of melancholia. And that this physical disease acts, not by virtue of combined emotions of worry, fear, etc., growing out of the disease, as Ziehen would have us believe, but by reason of malnutrition growing out of the physical disease. Herter, in his recent studies of auto-intoxication, has given us the clue to much of this distress. This I know from personal clinical experience, is the cause of mental disease. Take, for example, the cases having diabetes, gout, lithemia or the convalescence from infectious fevers for a background, and we have striking examples of the physical elements in causation.

It has fallen to my lot to meet a number of cases, in consultation, of alleged insanity who were victims simply of the uric acid diathesis, exaggerated to the point of interference with normal metabolism. A case whom I recently saw was sent me for observation and diagnosis. Careful inquiry and detailed laboratory investigation demonstrated it to be one of lithemia. By observing Haig's dictum, "control the uric acid and you control the mental disease," I sent him home in two weeks, able to resume his work. You all meet with such cases, and I dare say you rejoice in the fact that you are able to speedily return them to their fields of usefulness.

In diabetes there is a psychic element which grows out of the nutritive disorder. The actual psychosis is one of melancholia and hypochondriasis. I have had but four such cases in my practice in the last ten years. Van Noorden (Twentieth Century Practice, Vol. ii), remarks in addition to the fact that melancholia may be present in diabetics, that it may be noticed in all grades of severity, from an almost imperceptible degree of hebetude to the most pronounced form of disorder—suicidal and homicidal melancholy aspects being not infrequent.

I will not enlarge upon those nutritive diseases as being factors, as time will not prevent. However, in closing I wish to add that arteriosclerosis is perhaps one of the most frequent factors in the causation of melancholia in patients past the age of 35 years. Again we may meet cases in active business men whose minds are clear and strong, but who are given to dejection, to melancholy and even to acute melancholia. Their disposition shows a tendency to change, and they are easily moved by their emotions. To all external appearances they are well physically, and it is difficult to detect any grave disturbance of nutrition, and yet if such a case should die, say from intercurrent disease, postmortem examination would reveal arteriosclerosis, especially involving the central arteries and perhaps the basilar artery. (It is a fact that the arteries which are exposed to the greatest strain are first affected by the organic change, arteriosclerosis.)

I have met many such cases, and now have under my care a case given to periodic attacks of melancholia marked by delusions, etc., who is a victim to arteriosclerosis involving the kidney and heart as well as the brain. The very nature of arteriosclerosis is such that it induces wide-spread disturbances of nutrition, and while the brain, the kidney or the heart may show the first evidences of disturbed nutrition, it is very probable that ere long the disturbance will be general rather than local. As Meigs says, "Perhaps no one thing is more important for the diagnostician to know than that vascular disease and fibrosis are certain to come in all men if they live to be old enough."

In conclusion then, let me say that:

1. Mind has a physical basis.
2. The brain is the organ of the mind.
3. The activity of the brain is dependent upon its nutrition.
4. When badly nourished, either from poor blood or illy distributed blood, mental depression and melancholia result.
5. Melancholia is a nutritive disorder, characterized by mental symptoms of depression, dejection, delusions, etc., and the physical symptoms of impaired bodily nutrition, which latter symptoms are as essential evidences of disease as the mental irregularities.

DISCUSSION.

Dr. MEYER of New York—The paper suggests to me a few remarks similar to those that I made yesterday with regard to the paper of Dr. Punton. The general impression is natural that we are dealing in melancholia with an entity, just as we have the entity of neurasthenia, with which everybody is familiar. Now, on observation of a large number of admis-

sions (we have had about eight hundred admissions), and from careful examinations during the last eighteen or twenty months, we found a great number of cases which undoubtedly would have, according to the old classification, gone into the group of melancholia; that is to say, in those classifications which are made at the end of the year for purpose of statistics. In our attempts to make a diagnosis the first week or the second week after the admission of the patient, it was naturally our purpose to make a diagnosis which would mean something as to the future of the case, and not simply a general term according as the patient was depressed or not. It was a question as to what possible classes that patient, whom we were at first sight inclined to call a case of melancholia, would belong. While I admit that melancholia is an entity that everyone knows, I myself could not be satisfied with that. It seemed that for our present research it was our absolute duty to try and find out whether, from the appearances and from the symptomatology in the onset and in the first weeks of the disease, we could not make a conclusion as to what form of melancholia we were dealing with and as to what we could expect in the later course of the disease. This line of thought was opened by Goldvon, over thirty years ago; his books have been too difficult to find, it seems, and have been buried under the inclination of the alienist to examine spinal cords and brains and degenerations, instead of attending to psychiatry. The movement has been taken up again by Krebling, and it now seems fairly certain to me that we have a problem before us about as follows: It seems from the observation of a large number of cases of melancholia, of what everybody would call melancholia, that we are dealing with quite a number of different disease processes. One might instance that disease process which is so difficult to distinguish from neurasthenia and which was yesterday spoken of as having hardly no distinction from neurasthenia. Then melancholia which occurs in the twenties and thirties, and is coming on rarer at intervals during life, perhaps five, six, eight, ten, twenty times, always in individuals with strong hereditary dispositions, and rather distinguished by the fact that the inhibition, which is called one of the cardinal symptoms of melancholia by the German surgeons, is not present there. Then we have melancholias which are undoubtedly general paralyses. Then there are melancholias which belong to the circular insanities, which change into mania, and can be distingushed by the absence of inhibition. The other view, of course, the nutrition view, is a general question, and while it is of great importance in the treatment of the disease, has relatively little to do with this subject.

Dr. LICHTY, Union Springs, N. Y.—A year ago I came to this Section in Philadelphia, and there seemed to be a strong inclination on the part of the members of the Section to refer these cases of melancholia, neurasthenia and hysteria to faults in nutrition, and I went back from that meeting and thought that I would make certain observations from these cases in reference to that, especially in line with the investigations which Haig has made. I must say that I was rather disappointed. I was unable to verify the assertions which Haig has made, as to the examination of the urine and the relation of uric acid to these cases. But one thing has forced itself upon me, and that is that in most of these cases we do find a change in nutrition. It may be that the changes which I found have been rarer because I see the patients earlier. The institution in which I am working does not take any insane cases, but we do take melancholiacs, and I was impressed with the fact that we find a thick blood—a blood with hemoglobin of 100, 105, 110, and 6,000,000 corpuscles, and also a heavy urine of a high specific gravity. This may be due to the fact that these people were traveling for long distances before reaching the institution, but I have had them drink the same amount of water as they did before they came and the urine remained of high specific gravity. In the stomach contents I would usually find a hyperacidity. Putting these things together, it seems to me that in melancholia especially, and also in hysteria and neurasthenia, there is faulty elimination. The patient has been inactive; he has not been eating properly; he has not been drinking sufficient water; and acting upon this principle, giving the patient employment, putting him out in the open air, having him eat less and food which is more easily assimilated (probably he really takes more food by taking the diet which I give him than the diet which he has heretofore been taking), and by having him take large amounts of plain water I have succeeded in obtaining good results in these cases. I think the paper which was read is in line with what I have found in my experience.

Dr. JOHN PUNTON—I think the subject of melancholia is one that we can well afford to study carefully, and while the disease has been recognized ever since the days of Hippocrates, yet it does seem that there is a great deal for us to learn in regard to this very common form of insanity. I believe that most forms of insanity are preceded by mental depression; hence, it is certainly the most common of all the varieties of insanity. In addition to that, I believe that it is only curable in its earlier stages. I believe that the cases of melancholia which are out and out cures come under observation soon after the onset of the disease.

The first step in successful treatment is isolation from home. The insane asylum is not the best place for incipient cases of melancholia. The environment of an insane asylum is against the recovery of ordinary cases of melancholia in my judgment. The State should provide for detention hospitals—half way hospitals between the patient's home and the insane asylum. Today the moment we find a melancholiac in ordinary practice, recognizing that we may have at any time suicidal impulse, and recognizing the fact that the patient is irresponsible, we are compelled to send him to the insane asylum. Usually he remains and becomes an incurable case. If we had a detention hospital that patient could be given the benefit of the doubt, for say from one to six months, and you would be giving your patient a chance of recovery.

Dr. RIGGS of St. Paul, Minn.—I consider the discussion of melancholia most important. Melancholia sine delirio is one important form of melancholia that in my judgment should receive especial attention at the hands of the alienist and neurologist. I am firmly of the opinion that melancholia, as all forms of insanity, starts as a perversion of the functional nutrition of the cell. I think that is the starting point of the insane condition. Usually the light form of melancholia is more dangerous, as far as suicidal impulse is concerned, than any other. My experience, however, has been entirely different from that of Dr. Punton. These cases almost invariably get well. If they do not kill themselves before they have an opportunity to get well, they recover. I can not feel as Dr. Punton does in reference to our insane asylums. The gentlemen whom I have the honor to be acquainted with and work with along the line of psychiatry are thoroughly alive to these classes of cases; the kind of treatment; their proper care in the institution; their environment, and everything of the kind. Of course, if it is possible to prevent cases of this character from going to a State institution, because of the false idea that stigma rests upon one therefrom, it is better to do so; but that false feeling should pass away. Insanity is nothing more than typhoid fever; it is simply an expression of a physical state.

Dr. W. J. HERDMAN—Like all nervous diseases which we have been dealing with in their chronic form, with their fixed and irrevocable conditions, the tendency is now to get back to the incipient stages; if we are to make any progress at all in the arresting of this class of disease, we must learn more concerning the incipient changes which take place. That is the line of research in all directions at the present time with reference to the insanities. As has been said by Dr. Riggs, very truly, it is a perverted nutrition at the outstart; and I have in my mind now three cases of my own in which that perverted nutrition was apparently due to reflex causes. You all heard yesterday a report of an acute case of melancholia, the picture being typic. There were disorders of the pelvic organs, and these being corrected the case immediately made a satisfactory recovery. My first experience with a case of melancholia of a typic character was in a young woman of 19 years of age. In making that general observation or investigation of the system which has been my custom always with patients, I discovered that she had an imperfect hymen, and that she never had menstruated to outward appearance. Her mother knew that there was something wrong, but no investigation had been made by the attending physician. I found that there was a tumor resulting from the retained discharge, and it had largely dilated the uterus. I of course immediately advised that the contents of the uterine canal be removed, and that was done, gradually of course, and she made a complete and perfect recovery, although up to that time she had had a strong tendency to suicide for three or four months, and they had had to restrain her for some time from casting herself out of the window. She was in a pronounced state of acute typic melancholia, and as far as we could discover that was the only physical cause there was present there, and when that was removed she made a very satisfactory recovery, remaining well ever since. She is now the mother of a family, and has been a perfectly well woman ever since that time.

The other case which I have in mind, due to pelvic irritation, was one in which retreflexion of the uterus was the apparent cause. The woman had borne several children. She became acutely melancholy, and it was necessary to transfer her to an asylum. She became somewhat better, but pronounced symptoms of melancholia persisted. Allison's operation was performed upon her, after careful investigation of her condition in

all respects, and that having been found to be an apparently serious element in her disease, and she recovered, and has remained well ever since. These are the most pronounced in their apparently reflex cause, but I have several cases which seemed to point in that direction. These disorders, of course, produce reflex disturbance; this reflex disturbance produces a change of metabolism of some sort. Before we can get at these incipient causes of the disorder we must know more physiology; we must know what these reflex disorders produce in the way of change, metabolic disturbance. We must know what are either the produced poisons or the interferences with excretion which put the system in a state of disorered metabolism and bring about these mental changes; and until we make progress in that direction I think there is very little to be expected from the investigations upon the chronic states, which, as Dr. Meyer has well pointed out, may take a variety of courses, depending very largely upon the individual characteristics, upon the peculiarity of physical organisms.

I wish to say one word in favor of what has been suggested by Dr. Punton in regard to a detention hospital. It has been for years in my mind a necessity. It has been our experience, in Michigan at any rate, that we have in connection with our insane hospital staff men who have very little experience in general practice; men who have grown up, as it were, in asylum work; men who have not had an opportunity, for instance, to deal with questions of ophthalmology, of gynecology, of general surgery. Their range of experience has not been sufficiently wide to thoroughly canvass a case of this sort in its incipient stages. It seems to me a detention hospital, where these cases could be taken and dealt with in every aspect of the case, would be very helpful and would result in a great many more of them being saved from chronic melancholia or insanity.

Dr. TOMLINSON of Missouri—I would like first to enter a protest against calling every depressed individual a case of melancholia. My understanding of melancholia is that it is an entity, the principal characteristic of which is that there is no mental reduction; in other words, that the intellectual capacity of the individual is retained, and that if that is not present it is not a case of melancholia. A man may be depressed because he is demented, but it seems to me absurd to call everyone who is depressed a case of melancholia. I am very sorry to see what I might call the syllogistic methods of our clinical friends enter into the discussion of the treatment of insanity; that is, that so-and-so found such and such a state, and that a given result was produced; ergo, that the result was caused by that condition. I do not think it is scientific, and I do not think it proves anything. I think a detention hospital is all right, but it is still a hospital for the insane, and if it were once established, to make it competent to perform its work it would have to have all the surroundings, all the accessories and all the facilities which characterized a hospital for the insane, and then what would it be but a hospital for the insane? If it were a State institution everyone would insist that their insane should be sent to that detention hospital and be kept there as long as possible.

Dr. WOODSON—I think that all alienists are agreed that, taking into consideration the cases of melancholia that come under their treatment, that form of insanity greatly exceeds all others. Again, I think that all alienists will agree that a very large percentage of the ordinary cases of melancholia end in recovery, and there is nothing more beneficial than the improvement of the patient's general health. When you get your cases of melancholia to partake freely of milk and medicine, and take exercise in the open air and sunshine, especially so if they are inclined to take on flesh, they almost invariably recover. In giving advice to the friends of the patient when he is being taken from the institution, the invariable advice is, "Do not permit the patient to run down or decline in health." So far as detention hospitals are concerned, I have this to say: If it is reasonable to presume that a detention hospital will be better equipped or provided with better physicians or men more experienced in gynecology, insanity, general medicine; then there is no reason why it should not be nearly as good as the general institution. But is it not possible to treat melancholia in a general hospital. In regard to the discussion yesterday, some gentleman said that no gynecologists are in favor of performing an operation to restore the insane mind, unless there is a pathologic condition demanding the operation. So far so good. I say if there is a woman who has a pathologic condition which demands an operation, or would demand it in health, it should be performed for the purpose of restoring that part if possible, and if perchance it does further and better the condition of the mind, so much the better. No neurologist is justified in saying to a gynecologist that by removing the appendages of the uterine organs it will cure the mind, because he does not know that it will. In an experience of eight or ten years I can report twice as many cases of insanity that are attributed to operations from the hands of our distinguished brothers—more cases than they reported as having been restored! They said nothing about the number of cases that had become insane from the operations, but they herald to us the cases that they have restored.

Dr. SEARCY of Alabama—Possibly as good a definition as we can make of that condition of consciousness which we call "melancholia" may be that it is a general sense of disability or inability on the part of the person in his capacity to adjust himself according to what he wishes to do. But there is in melancholia, more or less, an ability to reason. It is not a demented state. There is an ability on the part of the patient to think, and his melancholic condition is one of a sense of disability. What brings that about is largely a natural tendency in the person to take that way to think; it is a hereditary tendency to depression of spirit and of feeling. A large part of our neurology is cerebrology; a large part of neurasthenia is cerebrasthenia; and a great part of the work of neurologists is that which relates to the conscious organ, the brain. The other day I was in the Medical Section when the subject of consumption came up, and yesterday every one was willing to talk about headaches, and today when we speak about melancholia, we find that every one is ready to talk about melancholia, because all those subjects are frequent fields of thought. In those conditions of the system that produce cerebropathic states possibly nothing tends so much to bring about melancholic states as toxic conditions that arise from the alimentary canal. The melancholic patients, as soon as you can get an aseptic state of his digestive apparatus, will generally improve, and as soon as you can put his system in such a state that he is relieved of toxins, whether they come from the pelvic organs or anywhere else, this will tend to relieve his melancholia. In general practice the largest part of our medication is in the direction of rendering the digestive tubes aseptic.

Dr. CHARLES H. HUGHES—The chair would like to express his extreme surprise that Dr. Punton should make the statement that the environment of an insane asylum is against the recovery of ordinary acute melancholia. This, in my judgment and observation, is not true. The best influence that you can bring to bear upon an insane man is a change of environment, and if the insane man is in such a condition as to receive any sort of impression from his environments an insane asylum is the best of all kinds, with its illustrations, its object-lessons of insanity, its object-lessons of melancholia in other persons, its methods of diversion and means of rest, and its removal from home. All this affords the best opportunity for the cure of melancholia. I have seen far more melancholiacs recover in insane asylums than ever recovered out of them; I have seen a larger percentage of melancholia recover inside of an asylum than of any other form of mental aberration, except acute mania, and I think great injustice is done to the value of insane asylums by a statement of that character. These attacks that are made upon medical men when they get into an asylum are strangely inconsistent to me. A medical man is just as good a medical man after he goes into a lunatic asylum, unless he goes there as a patient, as he was before. He generally has a wider field of observation, and some of the most discerning diagnosticians I have ever encountered were those who had learned to diagnose the insane, who hindered and retarded, instead of helping your diagnosis. The cure of melancholia consists of diversion, of recuperation, and also of rest. It is the changed environment that effects the average cure of the melancholiac. As has been stated, if you can save a melancholiac from killing himself you can almost always cure him.

Dr. NORBURY—I admit that melancholy is a symptom just as fever is. I believe, however, taking it on the whole, we have a recognized disease of melancholia, without going through the progressive dejection of which the text-books speak and which Dr. Tomlinson mentioned. You may have a case of profound melancholia following uric acid poisoning, with classic symptoms. The gentleman from New York State speaks of his so-called failure with the Haig cases. I would say that these cases are cases of short duration, and do not get into insane hospitals. I have in mind two cases which I have seen in the past three months; one case went home just before I came to Colorado, one in a general hospital—not in the insane hospital—following the uric acid condition. By cleaning up the uric acid, you relieved the melancholia and even the delusions, which, in this case, were not profound. The man was not in the hospital more than three weeks; I do not say that he had recovered, but the mental symptoms had cleared up. Another case of renal calculi presented the ordinary classic symptoms of renal calculi, suppressed urine,

intense pain, etc. There was a period of dejection with marked suicidal delusions. With the discharge of the calculi the patient has improved. What we need in the consideration of melancholia is more attention to the internal medicine aspect of the case; we need more attention to the diagnosis, more attention to the study of the case from the basis of internal medicine.

HOW TO LIMIT THE OVER-PRODUCTION OF DEFECTIVES AND CRIMINALS.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. H. McCASSY, M.A., M.D.

FORMER SUPT. OF KANSAS STATE INSANE ASYLUM AT TOPEKA.

DAYTON, OHIO.

Upon the solution of this problem hangs the fate of home, nation, and civilization. It is the concern of all good citizens to do something to improve posterity. During the past ten years the population of the United States has increased 25 per cent., but during the same period crime increased 60 per cent. The cost to the public for the care of defectives and for the prosecution and support of criminals is enormous, to say nothing about the destruction of life and property, confidence and morality. We go on building asylums, hospitals, reformatories and prisons, and we keep them full. Imbecility, idiocy, insanity, epilepsy, deafness, blindness, incorrigibility, youthful waywardness, adolescent vice, immorality, and adult criminality multiply apace in the land. It is high time to improve the method of preventing over-production of defectives and criminals. We are too prone to assail results or salve over the surface of our social sore, leaving the roots untouched. No one can afford to ignore this subject. It concerns every taxpayer, and every one who makes his own living is a taxpayer, whether he owns real estate or not. The problem consists of prevention, reformation and extinction. The basic causes of crime must be attacked.

The ancient uncivilized nations knocked their old men and old women in the head; strangled the superfluous babes between thumb and finger or left them to perish upon the mountain side; and threw their defectives into the water or fed them on the juice of the poppy as a less brutal means of effecting their exit from this world. Criminals among inferior peoples are comparatively fewer and are not dealt with tenderly. A dose of tomahawk ends their career. They are little or no tax upon the public, and they are very little in evidence. The lower stratum of development in savagery and barbarism produces comparatively fewer defectives than do the enlightened and educated strata. While the highest types of individual and national growth, power, education and excellence are attained in our modern social development, nevertheless, the wayside is strewn with failures; although defectives and criminals are largely bred from the same classes, a great many recruits come from families of high standing. It is not necessary to scan very far along even good family lines until you come to a stray sheep, and often a black one at that. A defective and a genius may be found in the same family.

The Roman and the Greek laws did not bother much with moral improvement. The best test of modern civilization is shown by the way the defectives are treated. Society admits that the criminal has some rights which it is bound to respect; and not the least of these is the right to reform. The defectives must be cared for in the most humane and conservative manner. Barbarism and brutality are not economical for up-to-date nations.

PSYCHOLOGY OF CRIME.

Although criminal offenses appear to be spontaneous and impulsive, yet if they could be traced they would be found to be due to a variety of causes. Modern science teaches that nothing *happens*. Everything that comes to us is pushed from behind. In society, as organized at present, there are constantly at work forces which germinate crime and disorder. Seven thousand murders take place annually in the United States. Ninety per cent. of the reading matter upon which the community feeds tends to disintegrate character and bring disorder and abnormity into prominence. Our daily and weekly papers are devoted largely to illustrating crime and immorality. The sediment left after the reading of murders, suicides, thefts, and immoralities, poisons the youthful minds and leaves indelible scars upon their tender souls. All pictures thrown upon the mental canvas modify their recipient accordingly as they are good or evil. Persons are swayed by the character of the pictures before which they linger. The scientific way to destroy evil is not to hold up and analyze it in order to make it hateful, but rather to let it pass out of consciousness. If we hope for improvement in the generation unborn we must dull the appetite for "blood-and-thunder" fiction. It is useless to ask the publishers to abandon a paying business. By a crusade of education against vice, we must lift the minds of our generation above the present demand for sensational reading matter.

All education, physical, mental or moral, is primarily a cultivation of powers of resistance. Cares, anxieties, business and social difficulties prey upon the mind; and if they are not repelled insanity is the result. Depraved natural appetites, if unrestricted, result in crime. We guard against physical disease by building up the tissues and selecting healthful environment. We guard against mental disease by educating the mind and avoiding pursuits that bring excessive intellectual strain and dissipation. We may guard against crime by educating the higher ethical sense and by removing the temptations to wrong-doing. Certain mental equipments are suitable for certain occupations. When a person selects proper pursuits in life success and happiness will likely follow, but a wrong selection brings misery and crime. There came to my notice a case which illustrates one phase of this subject. Two brothers, many of whose relatives had gone insane, started to study medicine. The strain on both to keep up with the class was great. When they were nearing the end of the second term, one of them went hopelessly insane. The other studied the literature of his case, and when he found inherited insanity in his family history he concluded to abandon further study of medicine. He went to farming and made a great success in raising cattle and hogs. He said that the nearer he got to the simple ways of living the better he felt. He became a good and prosperous farmer.

The criminal differs from the normal being in the fact that he has less power of resisting crime. We all have the criminal tendency more or less, but it is suppressed by cultivating higher instincts. If the child of the criminal is allowed to grow up under the

tutorage of crime he will be a criminal. If the same child is brought up in a good family, the results will be better. It will not, however, do to depend too much on environment. Favorable environment will overcome inbred propensities to a certain extent, but in many cases, where there is too much to overcome the over-mastering criminal propensities will land the unfortunate victim outside of the pale of good organized society. In this fact lies the great responsibility of childless families in procuring recruits from the Orphans' Home. Years of unremitting toil and loving care may be reduced to naught by the explosion of their inheritance of vice. Take, for example, Bessie Little of Dayton, Ohio, who was taken from the Orphans' Home and reared in a good family. She got along very well until she reached full maturity. Then her born erratic tendencies and insatiable egotism took possession of her. She loved Franz, her slayer, in his presence and hated him in his absence, because her judgment was dethroned by her passions. In this case the best of environment was inadequate to overcome her inheritance of vice; she broke down and became a criminal.

Heredity is nearly everything. "Blood will tell," and blood does tell. A born idiot can never be more than an idiot, but these form only a very small percentage of the defectives. Of all the streams of evil that flow into the national blood none is more virulent than that of imbecility. It is the legitimate offspring of the jail, the infirmary and the insane asylum. What a remarkable lesson there is in the case of Max Jukes of New York State. He was a Dutch settler, born about 1740, a hunter and fisherman. He was a great drunkard, and the progenitor of 1200 persons, nearly all criminals, vagabonds, paupers and prostitutes. In seventy-five years the descendants of Jukes committed 115 criminal offenses. Not more than 20 of them were skilled workmen, and ten of these learned a trade in prison. This family cost the State of New York one million dollars. Crime, imbecility and insanity are due in 60 to 75 per cent. of cases to heredity. We do not expect to entirely eliminate bad blood from the race, but that we can greatly lessen it is both possible and probable.

Insanity is much more prevalent among the Quakers or Friends than any other religious sect, perhaps, because of their sadness and gloom in religious worship. Insanity is less prevalent among the colored people than any other race, because of their simple wants and happy disposition. The general causes of insanity are: heredity, 50 to 60 per cent.; whisky, 12 per cent.; religious perversion, 10 per cent.; disappointment in love, 10 per cent. Eighty per cent. of drunkenness is due to heredity; alcohol causes 33 per cent. of the diseases, 75 per cent. of the crimes, and 50 per cent. of the poverty that afflicts our race. Intemperance of parents causes 34 per cent. of the imbecility in children. Drunkenness in the parent may not be followed by drunkenness in the offspring, but epilepsy or kleptomania, hysteria or apoplexy in the mother may be followed by some form of insanity in the offspring. Parents transmit not alone their inherited tendencies, but their acquired peculiarities as well. There are 100,000 orphans in the United States. One-fourth of these are classed as juvenile delinquents or defectives. It costs ten million dollars a year to care for those orphans. Dr. John S. Billings, in charge of the Census Office, gave us the following figures for the whole United States in 1890: Insane, 106,254; imbeciles and idiots, 95,571; blind, 50,411; deafmutes 41,283; paupers, 73,045; prisoners, 86,000.

SEX IN RELATION TO CRIME.

Females, being physically weaker than males, are addicted to crime only one-fifth as frequently, and only excel the males in the commission of poisoning and infanticide. Woman's natural form of retrogression is prostitution.

SEASON IN RELATION TO CRIME.

Crimes against property are more prevalent during the cold season of the year and in cold climates, while crimes of passion and against the person are more prevalent in warm climates and during the hot season of the year. Intemperance is prevalent in the temperate zone. The boy asked his father how it happened that people drank so much beer and whisky in the temperate zone.

CAUSE OF CRIMINALITY AND DEFECTIVENESS.

Population has increased too rapidly. More children have been born to poor people than they could rear properly. To raise and educate properly one child requires enormous outlay. To raise properly one child would be a big task for most husbands and wives, to say nothing about six or ten children. Parents of education and means rarely have more than two children. If they have a third child, it is a mistake. This is the cause of a lack of growth of the population at the top and of an excessive growth of the population at the bottom. According to vital statistics it takes on an average about 3½ children to each couple to propagate their kind. Too many people are heedless of all Biblical commands except "multiply and replenish the earth." The next great basic cause of crime and defectiveness is the implied inferiority of women. The idea of woman's inferiority has come down to us from a barbarous past. The man-made laws have, all along the line, accorded the male sex dominion over the female, which has placed millions of girls and women at a disadvantage in the struggle for bread, and which compels thousands of them yearly to accept degradation or starvation. This has kept the moral fabric of society weak. Improvement in our race is an idle dream until woman is accorded perfect justice and placed squarely on equality with man. The helpless slavery of woman, with the attendant evils of enforced motherhood must be relegated to the rear as a crumbling relic of barbaric injustice. If the father be the head and the hands of the family, *the mother is the heart.*

A child has a right to be well born. The man whose destiny is unfavorably formed for him by his ancestors is to be pitied. Many of the rich and poor are alike born into this world with an inheritance of vice and degradation. They are crippled from the very beginning, and have only half a chance for health and prosperity. The end and aim of sex and sex-relation is simply the perpetuation of the species. Sex relation has been diverted from its proper mission. As an example, 40,000 abandoned women are to be found in the city of New York. The *Arena* for January, 1898, gives the following figures for Massachusetts, New York and Illinois: Sixteen per cent of the married men desert their wives after the birth of the first child, and 28 per cent. after the birth of the second child. The children of such parents are placed at an immense disadvantage. Add to this the work of the wholesale divorce mill and it will be apparent that

marriage to a considerable extent is a failure. Women have opened their eyes to this condition, and as a result 18 per cent. of women of marriageable age in the United States have equipped themselves for earning a living independent of man. She is a worthy competitor of man today in manufacturing, mercantile, professional and other pursuits. When women can completely assert their independence there will be improvement in motherhood. Improved motherhood is the safeguard of the generation unborn.

Our civilization has developed so rapidly that it has retained many of the elements of barbarism and savagery. A relic of savagery is inculcated in this: "He who would not avenge an insult is no man." "Manly dignity can be preserved by executing justice himself, not waiting for the medium of the law." In this way violence comes to be regarded as a virtue, revenge as a duty, and crime as heroic. In this there is a tendency to return to barbarism which blunts the moral sense. The second phase of modern civilization is characterized, not by violence and crimes of blood, but by craft and deceit, as adulterations in commerce, tricks of exchange and official fraud. There is a choice of becoming either hammer or anvil; the person who can not crush another without feeling pain must remain an anvil. Still the weak must serve the strong. The world bows to him who possesses more than others. This is the state of society, notwithstanding the bombastic and hypocritical assurance of brotherly love. Never before in the world's history has a person needed keener wit, greater frugality and prudence to make a living than now. The struggle is fierce and many are falling by the wayside.

Heredity is the great causal factor of crime. Next to this comes intemperance, which depends largely upon the former. It is not encouraging to note that the legal or legislative handling of intemperance has been a failure either in prevention, restriction or cure. The drink habit is still spreading. The greater portion of crime arises out of our social conditions and is amenable to reformatory measures. Only about 20 to 25 per cent. of criminals are born criminals. Three-fourths of the crime in our land is caused by neglected education.

Another source of the multiplication of crime in this country is the almost unrestricted immigration of the lower classes of foreigners from all lands. Our population has 20 per cent. of foreigners in it but they furnish more than half the inmates of our reformatories, one-third of our convicts and three-fifths of the paupers supported in almshouses (F. H. Wines, D.D.; Report in 11th Census).

Another cause of crime and pauperism is the undue flocking of the urban population to the cities. Our jails and prisons are simply high schools of depravity and nurseries of criminals. In the jails our courts husile ravishers, corrupters of youth, murderers, burglars, thieves, drunkards and all the foul members of society, with children convicted of petty larcenies or of incorrigibility, with detained witnesses and people accused of misdemeanors or crimes not yet tried. The inmates of the jail are liberally supplied with tobacco and cards. The junior offenders soon become assimilated to their hardened companions, and join the ranks of crime. The very air about the jail or prison reeks with crime. The criminal serves out his sentence in comparatively comfortable quarters, or he is pardoned out and turned loose upon a long-suffering public, upon which he preys and commits atrocities with increased skill. It is said that only about one-tenth of the criminal offenses are detected and punished.

In our advanced state of civilization, excessive culture has introduced new forms of crime, such as homicide for life insurance and the abuse of alcohol, cocain, opium and other narcotics. The negro was transplanted on American soil against his will by the whites and kept in slavery 260 years. The negro forms 12 per cent. of the population of the United States; commits 33 per cent. of the crimes; contributes 8 per cent. of the paupers and only 5 per cent of the lunatics.

To sum up the cause of the over-production of defectives and criminals, it can be stated in one sentence, viz.: Disobedience to the laws of nature and of physical hygiene during the present or preceding generation. From the cradle to the grave man is in constant danger from the effects of violated laws.

HOW TO REMEDY THE OVER-PRODUCTION OF CRIMINALS AND DEFECTIVES.

This will involve a removal of the causes just enumerated. Society concerns itself too much with the punishment of crime and not enough with the prevention of it. The lessening of crime is as much a subject for education as for legislation. There is little use in passing laws in advance of public sentiment. Only one person in ten who has an opportunity to steal is restrained by thought of law. His conscience declares that it is wrong and that is enough. Good healthy sentiment needs to be awakened with a view to the suppression of crime. Wholesome laws will follow in the wake of public sentiment. A law without the moral support of the community is useless. If society stamps out crime it will not be the work of one generation, or of any single specific. A great many remedies must be tried. Punishment holds crime in check only, but does not put an end to it. Crime is more formidable than pauperism and is almost as costly. Only a small percentage of the evils afflicting society spring from want. A small number of crimes are due to sheer want of food. But prosperity generates criminal inclinations as well as does adversity, and on the whole the rich are about as much addicted to crime as the poor. Increase of material prosperity may reduce crime against property, but it increases drunkenness and crimes against the person. Increase of wealth must be accompanied by a healthy growth of morals to be a benefit to society. Our educational institutions could accomplish more, if more prominence was given to instruction in conduct and morality, but it is more essential that these should be taught and practiced in the homes; and to this end improvement of motherhood is indispensable. In the proper training of young children lies the best means of the prevention of defectives and criminals. A child at the age of five or six years has imbibed many ideas that cling to him during life. I lay great stress upon the training of the rising generation, because more can be accomplished by preventing the formation of bad habits in the young than by trying to reform confirmed transgressors.

PRISON REFORM.

The treatment of the criminal should fit him rather than the crime. The nature of the criminal should be studied, and suitable chastisement meted out to him. It should be corrective rather than punitive.

A course of instruction in conduct and the duties of citizenship should be part of the prison work. The youthful offender should be dealt with kindly. The efficacy of fines should be well tried before resorting to imprisonment. Junior offenders should not be classed with old offenders. Offenders for the second and third time should be classed as life convicts, and be compelled to "work out their own salvation." There should be rewards for toil and punishment for idleness. Labor organizations are on record that convicts should work, but for thirty years they have protested against convict labor coming into competition with free labor. Convicts should work, but how to employ them judiciously without having their labor come into competition with free labor is difficult to solve. The product of their labor should go in the direction of manufacturing articles for the charitable and penal institutions. No one should object to this. Capital punishment is a crumbling relic of barbarism. The murderer is not put to death as frequently as formerly. In another generation the death penalty will be abolished. Two wrongs do not make a right. It is folly to slander the slanderer or to steal from the thief. The death penalty used to be inflicted in public, but it was found that publicity of crime was detrimental to the suppression of crime. Many people commit crime from imitation by seeing it illustrated in the newspapers. The term sentence for prisoners should be abolished. The curable should be cured and the incurable should be kept for life in seclusion, at self-sustaining labor. It would be ridiculous to sentence a lunatic to an asylum for one or two years. The criminal should be given an immediate sentence and his liberty should be abridged until he proves himself worthy of the confidence of the community. The board of pardons should be made up of the sentencing judges, the warden of the prison and one of the chief justices of the State. This board should meet quarterly, hear evidence and correct mistakes of sentence.

According to sanitary laws, your house may be quarantined and the family prohibited from mingling with the public. According to the school laws your children are taken from you five hours per day, from the age 8 to 14 years, for educational purposes. In view of all this, it seems reasonable that laws could be enforced to keep poison out of the blood of the nation. The State should abridge the liberty of criminals and defectives earlier in their career of destruction. The truest kindness to the defective is to prevent him from being born, because he is his own greatest curse. Often the greatest liberty is the greatest curse and danger. The issuing of marriage license should be restricted by requiring medical and other affidavits to be filed with the probate court showing that the applicants for marriage license are free from insanity, criminality and other hereditary taints. The great majority of defectives and criminals can earn their own living under efficient supervision. There should be more institutions in the land like the Elmira Reformatory, and colonies for the care and keeping of defectives. The outlay now would prove a great saving in the future. Prevention is better than cure. It is better to keep the murderer from coming into existence than to smooth his pathway to the gallows. It cost the State about $20,000 to try Durant; $20,000 to try Jackson and Walling; $25,000 to try Luetgert. The cost to the State for trying an alleged murderer, if put on interest, would keep a person a whole lifetime in comparative luxury.

ASEXUALIZATION.

I have given this subject much thought. I have felt the pulse of the public for a long time in the radical and conservative arteries. I think the treatment would be effectual, but the difficulties lying in the way are at present insurmountable, except for friendless paupers. It would be impossible to follow it out through all the ramifications of heredity when genius and insanity, brilliancy and imbecility are found in the same family. Society, as organized at present, accepts the proposition of reforming the whole man, not part of a man. Amputation of a thief's both legs would incapacitate him from being a successful robber, but society will not accept such treatment. Asexualization of adults often leaves a troublesome amount of sexual desire, and even if it is done in childhood, there is by no means a total absence of it, though it is much lessened. Oriental people, including the Turks, have tried this treatment among the Eastern eunuch and have no confidence in it as an agency for moral reform. The eunuchs were shameless, melancholic and often suicidal, as well as defective in courage, gentleness and remorse. Although the valleys are deep and dark, we must not dwell in an atmosphere of gloom, but must move on and up toward the greater light, realizing that with every step taken vision becomes clearer and more comprehensive, and that positions occupied today with safety were yesterday inaccessible. The hilltops of science are luminous, and the public sentiment of the future is destined to be more and more informed by science and will eventually adopt its suggestions in matters of statecraft and social economics.

Rape is frequently caused by diseased sexual passions. Surgeons daily remove tumors and limbs for the cure of disease. To asexualize the rapist would protect against repetition of the offense. The punishment would be none too severe. The rapist should take the radical treatment. How many rapists under sentence for five to twenty years would accept this operation as the price of freedom, would be difficult to say. If this class of criminals were given one year after sentence had been pronounced in which to accept this operation as the price of their liberty, only a small percentage of them would remain in prison.

Asexualization of defectives and criminals, both male and female, would speedily limit the dissemination of disease, vice and crime. It would remove their obliquities and transform many of them into useful and productive citizens. By eliminating their productive capacity it would diminish their numbers and permit a rise in the physical, intellectual and moral standard of the race. Owing to the innate repugnance toward this condition, as a penalty for crime, it would be a powerful deterrent and thereby diminish crime, protect against many ravagers, and satisfy the vengeance of the outraged community. Ignorance, intemperance, poverty, disease and defects are symptoms indicating a social state or condition of crime and pauperism rather than the cause of them. Society maintains alive those that would perish without its aid. It is folly to permit the breeding of social gangrene.

The reproductive organs have no function in the human organism except the creation and gratification of desire and the reproduction of the species. Their loss has no effect upon the health and longevity of

man. Their removal would destroy desire and diminish the wants of nature. A want removed is equivalent to a want supplied. It would be a kindness rather than an injury to abnormal persons. The operation is simple, safe and painless. It would confer upon inmates of prisons, reformatories, etc., immunity from evil practices, and give them health and strength, satisfaction and comfort for discontent and insatiable desire. The prevention of reproduction should not be objectionable to this class, because idiotic, insane or criminal children are of no comfort to parents. Such surgery is as wise and merciful as vaccination or the extraction of a decayed and aching tooth.

In the *Cincinnati Lancet-Clinic*, Oct. 3, 1896, will be found a description of an operation invented by the writer for the cure of certain cases of insanity. The operation consists in cutting or exsecting from one-fourth to one-half inch of certain branches of the pudic nerve. This causes a suspension of the sexual activities for a period of from one to four years, with a return of same as soon as the nerves are reunited. This operation has not been in use long enough to judge of its usefulness. The sexual instinct was implanted for the propagation of the race, not for its degeneration and destruction. Humanity sins against the Creator by contributory neglect in this matter. Society arrests and confines the lepers, the victims of smallpox, yellow fever or cholera, and treats them as it sees fit. It shuts up the imbecile, the criminal and the insane for the protection of the public. No one questions its right to do so. Yet it allows the deformed and diseased in mind and body and soul to disseminate social leprosy and cancer. This could be prevented by the adoption of an operation almost as simple and painless as vaccination. It seems strange that the matter should be delayed so long. Asylums, prisons, and jails can not be built fast enough to meet the requirements of social neglect. Society is working at the wrong end of the subject. It should get at the rottenness of the root of the tree of humanity. The upper tenth in society has remained about the same for 3000 years. There used to be no submerged tenth, but today we have a largely increasing submerged tenth. There is a lack of growth at the top. Stature and health are decreasing. Weak nerves and weak stomachs are on the increase, as the result of faulty breeding. The decay of the Republic is due to the degeneracy of the people. It is an outrage that the State and Nation stand idly by and permit the intermarriage of criminals, paupers and defectives, thus becoming a party to the wholesale manufacture of probable criminals. The State has the right and power to prevent the probable from becoming the positive criminal.

History records that many cities have been built on this earth, some of them nearly as large and as rich as any of the present age, yet through internal disease they went down in ruin, and nothing but potsherds and broken brick remain to mark their former existence. It is time to put up the signboard and suggest whither we are drifting.

Let the nation adopt the plan of treatment herein suggested for one generation, and the result would be that all the inherited rottenness and corruption of ages would be purged out of the people, The criminal and pauper class would become extinct. Asylums, prisons and jails would become depopulated. The great burden of taxation would be lifted from the people. Doctor's bills would be less of a drain upon the family and chronic disease would be diminished. Let the sword of justice cut the knot of bondage and let society take control of its own destiny and regulate reproduction with the wisdom of experience, and the "ills which flesh is heir to" will vanish before the glorious dawn of the day of comfort, hope, peace and promise.

Fifth and Wilkinson Streets.

BIBLIOGRAPHY.

Havelock Ellis: The Criminal.
Morrison: The Criminal.
Morrison: Female Offender.
Morrison: Civilization; Cause and Cure.
Fairbanks: Introduction to Sociology.
F. M. Sprague: The Laws of Social Evolution.
Boies: Criminals and Paupers.
Reports from Elmira Reformatory.
Clouston: Mental Diseases.
Bevan-Lewis: Mental Diseases.
Tuke: Mental Diseases.
Sterns: Mental Diseases.
Sterns: Insanity; Its Causes and Prevention.
Lombroso: Insanity and Genius.

A CASE OF ACROMEGALY.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY HENRY WALDO COE, M.D.

Physician-in-Charge, Mindsease Sanitarium; Consulting Neurologist to the Oregon State Institutions for the Deaf, Dumb and Blind, etc.

PORTLAND, OREGON.

Although acromegaly was first described as a medical entity in 1886, since that time (Woods Hutchinson) two hundred and fifty cases have been reported, of an average of about twenty per year. When it is taken into account that probably at least one-half of these reported cases, like the one herewith submitted, were recognized, although not classified, before Marie brought the subject into prominence, it may not be deemed unreasonable to say that, the world over, ten represents the number of cases annually developing into the malady of acromegaly, and that it is, therefore, one of the rarest diseases known. The subject of acromegaly has been scientifically presented by numerous investigators quite recently, a list of several of the latest of these papers being found at the close of this report, and for the purpose of increasing the number of reported cases and to enhance the value of the more scientific papers on the subject, the following is briefly given:

Case 1.—Mrs. F. B., German extraction, aged 68, married, occupation, farm wife. Father living, in good health, aged 93. Mother, who had always been in good health, died recently at the age of 91. Several brothers and sisters are living, and all are, as far as can be determined, in good health, but each of these has a highly developed nervous system. All the members of the family are above the average in size, but no giantism or acromegaly is elsewhere reported. A negative history presented of tuberculosis, heart or other organic disease elsewhere in the family, while there is no special history of former serious illness in the patient herself.

Nothing abnormal was discovered in her physical condition until 50 years of age, when the irritability of the nervous system, characteristic of the family, began to be more pronounced, and defect in the exercise of normal will-power more manifest. The normal processes of cerebration declined rapidly, and on Feb. 21, 1893, she became so homicidal that she was committed to the Oregon Insane Asylum at Salem, where she has since remained. To Dr. D. A. Pain, the superintendent of that institution, I am largely indebted for much of the data making up this report. At the time of examination for commitment the physician making the same reported as follows: "This patient is a large, fleshy woman, with the vegetative functions well performed. Her lungs and heart are normal, as are all the organs so far as can be determined. Mentally, all the perceptions are normal. Her emotions are moved to great rage without provocation, or to great affection, although the latter much more rarely. Her intelligence is limited and she is incoherent in speech. Her will controls her only in mani-

festing her physical wants. She is abusive in her language, and sometimes violent with her hands."

No record was made at the asylum at that time of any special deformity of any portion of her body, and as the report of the examining physician of the committing court seems to show that a careful examination was made by him, and as he says that she was physically in a normal condition, we may therefore reasonably presume that acromegalous enlargement and deformity were not at the time present, or if so, in so slight a degree as to be unnoticeable. The incoherence, however, may have been a lingual ataxia from an enlargement of the tongue, already beginning at that time.

Three years later, the hospital reports spoke of the tongue as "large," and also that the "feet and hands are larger than usual." At this time such report also says, "bowels regular." Good pulse. At irregular intervals her face and neck became congested. Coarse, loud, vicious, and profane in speech, which is in a coarse, low-pitched voice. Delusions and hallucinations. Her general condition remained much the same, her mental state showing increased impairment, and on June 6, 1889, we find that she was reported as well-nourished, with bodily functions fairly well performed, and that she had constant delusions, illusions and hallucinations, although she did

not always obtrude them. Occasionally she was noisy, excited, abusive and violent, and her reasoning power and memory were defective.

Five years later, June, 1894, her physical condition was good, all functions being well performed. "Face, hands, feet and body generally enlarged. The tongue being too large to remain ordinarily within the mouth, is always protruded when she sleeps. Excitable and violent. Locomotion somewhat impaired, and no particular desire to move." At the present time she is able to walk only with much difficulty, from general weakness and ataxia. She prefers to, and does, sit in a large arm rocking chair most of the time. She has delusions, one of which has been fixed for many years, that is, that her former "neat, tidy and small body was stolen, and they put me in this big, ugly body." She is well-nourished, eating and sleeping well. Her extremities have shown further growth, and her hair has notably grown coarse during recent time. Most of the joints are normal, although all the metacarpophalangeal articular extremities are enlarged. Soft parts of the fingers enlarged, of sausage character. The inferior maxilla has grown prominently forward, and the teeth in closing extend beyond the upper three-fourths of an inch. Zygomatic arches somewhat prominent, and the nose and ears larger than normal. The superciliary arches protrude slightly. The spine is normal. The thyroid is small, the thymus not discernible. The sternum is increased in size, and the whole chest enlarged. The clavicles are thickened. She is strong and vigorous in general appearance, and weighs 202 pounds. Her present height is 5 feet $5\frac{1}{2}$ inches. Length of arm: axillary fold to tip of finger, $24\frac{1}{2}$ inches. Length of middle finger, $3\frac{1}{2}$ inches. The thumbs seem shorter than they should be, relative to the fingers. Finger nails coarse and thick. The circumference of the head is 22 inches.

There is no sugar in the urine, and Dr. J. T. Williamson says that there is no record of any diabetic symptoms having been present since his connection with the case, eleven years ago. Her pulse is usually rapid and her respiration slow. She has a blowing murmur with the second sound of the heart.

A feature of possible etiologic interest in this case is that the father and mother were first cousins.

BIBLIOGRAPHY.

Acromegaly, Exophthalmic Goitre, Phthisis Glycosuria, Dr. Geo. R. Murray.

A Case of Acromegalia, Harlow Brooks, M.D. N. Y. Med. Journal, March 27, 1897.

Acromegaly: Necropsy, Norman Dalton, Lancet, May 22, 1897.

Two Cases of Acromegaly, H. Gifford, M.D. Wes. Med. Review, June, 1897.

Skiagraphs of Acromegaly, Dr. O. L. Schmidt. Medicine, July, 1897.

A Case of Acromegaly, O. Osborne, M.D. Yale Med. Jour. Nov., 1897.

Treatment of Acromegaly by Extracts of Thyroid and Pituitary Glands Simultaneously, H. D. Rolleston. Lancet, Dec. 4, 1897.

The Brain and Spinal Cord from a Case of Acromegaly, Wm. A. Spiller, M.D.

Report before Phila. Neurological Society. Journal of Mental and Nervous Diseases, January, 1898.

A Case of Acromegaly, A. Ferree Wilmer, M.D. Int. Med. Magazine, January, 1898.

A Case of Acromegaly, Dr. A. Ferree Whitmer. Jour. of Nervous and Mental Diseases, January, 1898.

The Pituitary Gland as a Factor in Acromegaly and Giantism, Woods Hutchinson, M.D. Med. Jour., March 12 and April 2, 1898.

Acromegaly in Nebraska: Third Case, H. Gifford, M.D. Western Medical Review, March, 1898.

A Case of Acromegaly with Diabetes, T. L. Chadbourne, M.D. New York Med. Journal, April 2, 1898.

THE ARTIFICIAL FEEDING OF INFANTS IN GASTRO-INTESTINAL DISTURBANCES.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. M. G. CARTER, M.D., Sc.D., PH.D.

Professor of Clinical and Preventive Medicine in the College of Physicians and Surgeons, Chicago (School of Medicine, University of Illinois); Fellow of the American Academy of Medicine; Late President of the Illinois State Medical Society, etc.

WAUKEGAN, ILL.

Careful study of artificial feeding must be made in two classes of patients; 1, infants whose mother's milk does not agree; and 2, whose mothers are unable to nurse them. Some of these cases may be supplied by a wet nurse and perhaps everything pass along satisfactorily; but so much trouble is sometimes experienced with wet nurses and so much success attends artificial feeding by means of cow's milk, that many physicians today have almost entirely abandoned the wet-nurse method of feeding babies, especially in view of the fact that it is often difficult to secure a wet nurse whose constitutional history is entirely satisfactory.

In every case it is necessary to determine the cause of disturbance. Not until this is done is the physician in a position to permit or advise the adoption of an artificial diet. The most common cause of digestive derangements in infants is some fault in the feeding. There are at least four factors in this cause, one or more of which are usually present: 1, the food may be poor in quality; 2, it may be deficient or too abundant in quantity; 3, the interval between feedings may be too short or too long; 4, the food may not be of proper temperature. Rarely, cases of congenital malformation or imperfect development of the secretory apparatus of the stomach may cause trouble, even

when every precaution has been taken in regard to quality and quantity of food, and where proper intervals between feedings are scrupulously observed.

The first inquiry has reference to the source of the food. If it is mother's milk the health and temperament as well as the disposition of the mother must be taken into consideration. If the milk is too acid the administration of a little lime-water after each nursing may correct the difficulty. The mother's milk may contain too great a relative proportion of proteids and because of this constantly give rise to digestive derangements. In such a case, as well as in some others, the use of mother's milk is often necessarily abandoned and some form of artificial food prescribed. If the disturbance has continued until organic lesion of the stomach has supervened, as chronic dyspepsia or gastritis, additional modifications of the food may be required. Partial or complete predigestion or peptonization of cow's milk, especially for older children, may do very well in a few cases. In many cases, however, it is a long and tedious task to find a preparation which will entirely remove the condition and relieve the symptoms.

Next to mother's milk cow's milk is the proper food for infants; but it must be modified in the relative proportion of its elements so as to correspond with human milk. Each case requires special investigation. If there is constipation and a poorly nourished condition of the patient, cream should be given in larger proportion than in cases of well-nourished infants with a tendency to diarrhea. Bearing in mind the fact that normal human milk is alkaline, while cow's milk is neutral or acid, a necessity will be recognized for using a little lime-water with cow's milk. If the milk is not sterile it ought to be sterilized. If proper precautions have been taken in milking the cow, and the milk is passed *at once* into sterilized bottles, a healthy cow's milk *is sterile* and needs no heating except to raise it to proper temperature for feeding the baby—about 98 or 100 F.

It is necessary to analyze the milk before a proper comparison with human milk can be made; but when the exact composition is known, a simple calculation enables one to make the proper modifications. The method of procedure may be illustrated by referring to a case in my practice recently: The baby had considerable digestive disturbance and two or three slight convulsive seizures. The mother was tired and nervous, and anxious, but she had previously nursed two children without any disturbance whatever. This latter fact made it hard to convince her that the food was the cause of the disturbance. An analysis of her milk showed that it contained 2.80 per cent. of proteids, a proportion entirely too large. Otherwise the mother's milk was normal. The simple problem was to prepare a food from cow's milk which should equal human milk. The milk of the cow which belonged to the family was analyzed and found to consist of water 87.3; fat 4; lactose 5.69; proteids 2.80 per cent. Normal human milk contains water 88.4; fat 4; lactose 6.50; proteids 1.80 per cent. To reduce the cow's milk which we were to use in this case to the equivalent of normal human milk the following changes to make 500 c.c. for baby were used: Milk 312 c.c.; water 178 c.c. (water 174, lime-water 4); cream, 9 c.c.; lactose (milk sugar) 10 gm. When it is not convenient to analyze the milk to be used, the following formula for changing dairy cow's milk to the equivalent of human milk is very convenient and approximately correct: Milk, 300 c.c.; water 166 c.c.; lime-water, 4 c.c.; cream, 30 c.c.; lactose (sugar of milk) 8 gm. If constipation is present and the liver is acting properly the cream should be increased; if diarrhea prevails, the cream may need to be reduced or the lime-water increased. Sometimes colic and even diarrhea result from the proteids present in the milk, in which case it may be found necessary to diminish the proportion of milk and increase that of cream and water. There are few cases which seem to fare badly on milk in any form. Some of these thrive on a mixture of cream, sugar and barley water. Not unfrequently some of the prepared foods serve every purpose, and being convenient and easy of preparation it may be entirely proper to use them; but the child must be observed closely in order to see that it is properly nourished.

If in a given case it is found that the quality of the food is normal, the second point to determine relates to the quantity the baby receives. When the quality is right, a deviation from the normal is usually toward excess. Babies are likely to be fed too much as well as too frequently. A healthy child easily rejects an over-abundance of milk without serious consequences, but if any diseased condition exists in the stomach, the vomiting becomes the symptom of pathologic changes. In a table given below I give the quantity which will meet the requirements of most cases. Variations as indicated in the table, and frequently greater variations than there given, are required. These may depend upon conditions of the stomach and the size and weight of the child. The age of the patient exerts a marked influence and must always be taken into account. It is surprising in many cases that so little attention is bestowed on the age, the weight and the condition of the child's stomach. Particularly is this true in general practice in the hands of too large a proportion of the profession.

TABLE ACCORDING TO AGE.

Age.	Temperature of food.	Intervals, hours.	No. of feedings in 24 hours.	No. of night feedings.	Amount at each feeding.		Total amount in 24 hours.	
					oz.	c.c.	oz.	c.c.
One week	100	2	10	2	1 –1½	30-45	10 –15	300-450
Two weeks	100	2	10	2	1½–2	45-60	15 –20	450-600
Four weeks	98	2	10	2	2½–2¾	75-85	25 –28	750-850
Six weeks	98	2¼	10	2	3	90	30	900
Eight weeks	98	2½	9	1	3½	105	32	960
Three months	98	2½	9	1	3½–4	100-120	32 –36	960-1080
Four months	96	2½–3	8	1	4½–5	135-150	36	1080
Five months	90	3	7	1	5½	165	38½	1155
Six months	90	3	7	0	5¾	172	41	1204
Seven months	90	3	7	0	6	180	42	1260
Eight months	90	3	6	0	7 –7½	210-225	42 –45	1260-1350
Nine months	90	3	6	0	7½	225	45	1350
Ten months	90	3	6	0	7¾	233	46½	1395
Eleven months	90	3	5	0	9½	285	48	1440
Twelve months	90	3	5	0	9½	285	48	1440

The third point of interest in our study is the proper interval between feedings. This is shown in the table for different ages for the first year. It sometimes occurs that pathologic conditions, as acute gastritis, may require deviation from the suggestions here offered; and not only a reduction in amount, but a lengthening of the intervals may be necessary. The necessity frequently arises for rectal alimentation until the stomach has had rest. Frequent feedings with smaller amounts of nourishment, when milk is the diet, are objectionable because of the danger arising from having the stomach functionally engaged in two or three stages of digestion at the same time. In

stomachs with impaired digestive power it is frequently necessary to peptonize the milk or administer it alternately by mouth and rectum, so as to give the stomach time to complete one meal before another is given. Many cases of rachitis are due to too frequent feeding. I have met cases of anemia and subacute and chronic gastritis in children which were due to the habit of feeding at too short intervals. Care exercised in this particular will obviate many of the disturbances of infants in the first year of life. In general practice one of the most frequent vexations of the physician is to find that the mother or nurse girl is careless about the temperature of the baby's milk. If it is warmed at all, it is not warmed to a definite degree; and if it is to be pasteurized, often the matter is overdone and the milk boiled.

Artificial food for babies in the first month ought to have a temperature of 100 degrees F. After that time it may vary between 100 and the figure given in the accompanying table. The food must not be prepared and then allowed to lie about until it is cold before using. The approach to mother's milk should include temperature as distinctly as composition. As the child grows older, after three months, the proportion of water may be gradually reduced and that of milk increased, until at eight or ten months cow's milk unmodified will be borne by many children. The fact that many children survive the almost criminal negligence of their nurses in the particulars here mentioned is not of sufficient weight to justify a departure from rigorous care. The food should be sterilized, it must be of proper quality, of sufficient quantity, administered at proper intervals and be of proper temperature. In pathologic cases additional modifications may be required.

THE SURGERY OF CAMP WIKOFF.

BY N. SENN, LIEUT. COL. U. S. V.
CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

(*Continued from page 1307*).

ABSCESSES.

We would naturally take it for granted that among the returning soldiers from Cuba, owing to their greatly debilitated condition, suppurative affections in different forms, and affecting various tissues and organs, would furnish a rich and interesting material for the surgical ward of the General Hospital. The sources of infection were many, and the resistance of the tissues to pathogenic microbes in most of the men who returned was at low ebb. A good share of the surgical work consisted in incising and draining abscesses, some of them of enormous size. In the treatment of all of these cases, owing to the pronounced anemia and great weakness, special precautions were resorted to to prevent the loss of even as much as a teaspoonful of blood in performing the operations. In abscesses in the anal region the Paquelin cautery was usually used in preference to the knife, in laying open the abscess cavity. In other regions the abscess was opened by making an incision through the skin and underlying fascia large enough to admit the tip of the little finger, when the remaining tissues were tunneled with a pair of curved, rather sharp pointed forceps, and the tubular wound enlarged to the requisite extent by expanding the blades of the forceps during the withdrawal of the instrument. In most instances a counter-opening was made by plunging the forceps into the abscess cavity, inserted into the first opening, through the tissues from within outward until the tip of the instrument made a cone of the skin which was then incised, not over, but on the side of the instrument, sufficiently to permit the easy escape of the instrument when the canal was enlarged by expanding the blades, after which the end of the drain was grasped transversly and by withdrawing the instrument through drainage was established. The drains used were freely fenestrated, the openings being numerous, but never larger than to correspond in size to one-fourth of the circumference of the tube. The opening and counter-opening were made in places where drainage and irrigation would prove most efficient. In several cases in which the counter-opening could not be made by the use of the forceps, the abscess was opened in the usual way, and after evacuation of its contents peroxid of hydrogen was injected until the cavity was well distended, when the second opening was made in the same way as the first. After opening and draining the abscess, irrigation with a $2\frac{1}{2}$ per cent. solution of carbolic acid, followed by peroxid of hydrogen, and finally again with the carbolized solution. In all abscess cases the dressing consisted of a compress of gauze wrung out of a $2\frac{1}{2}$ per cent. solution of carbolic acid, over which oiled silk was applied with absorbent cotton around its edges, to act as a filter, and the whole confined in place by a well-applied bandage. In the more serious cases the dressing was removed, the abscess cavity flushed, and a new compress applied twice daily. Whenever it was deemed necessary, the affected limb was immobilized. This treatment proved uniformly successful in preventing profuse suppuration and was always followed by rapid improvement in the general condition of the patient.

In the medical treatment of these cases quinin was used freely, as well as alcoholic stimulants. Iron preparations and a nutritious diet proved most effectual in improving the condition of the impoverished blood and in restoring normal nutrition.

CONNECTIVE TISSUE ABSCESSES.

The connective tissue was the tissue most frequently the primary or secondary seat of infection. The phlegmonous inflammation which led to connective tissue abscesses occurred almost exclusively in men whose general health was shattered. As a rule the patients suffering from this affection presented an anemic, almost waxy appearance and were greatly emaciated. The deterioration of health was due to antecedent causes, malaria, yellow fever, dysentery, diarrhea, exposure and improper or insufficient food. The phlegmonous inflammation in most instances pursued a rather insidious process and was clinically not characterized by the complexus of symptoms which ordinarily accompany the inflammation preceding an acute abscess. The pain was often slight, tenderness moderate, and the skin seldom showed the inflammatory blush which so constantly is seen during the development of an acute subcutuneous abscess. A tendency to burrowing was manifest in most cases. The induration of the abscess wall, so common in acute abscess, was lacking in most of our cases. There seemed to be a total absence of a tendency to the limitation of the area of abscess formation. The cases that came under our observation resembled in their symptomatology, pathology and clinical course very closely abscess formation as seen during the latter course of any prolonged acute infective disease, or during convalescence from such. In opening these abscesses I was always careful to make the openings some distance from the center of the abscess cavity, in preference at its margins, and the same location was selected in case a counter opening was made. By following this method of incising and draining the abscess the skin over the center of the abscess, damaged to the greatest extent by the underlying phlegmonous process was avoided, and complete evacuation and free drainage secured. The same careful preparations were made for the operation as in cases requiring surgical intervention for aseptic conditions, with a view of guarding against secondary infection.

Under this treatment, the general and local conditions of the patients improved very rapidly. In abscesses of very large di-

mensions from two to four incisions were made and as many points of drainage established. As suppuration ceased and the abscess cavity commenced to shrink, the drains were shortened from time to time to enable the process of healing to proceed without hindrance from mechanical causes.

Case 14.—Robert Bloedel, age 25, Third Infantry Band, enlisted fifteen months ago. Had chills and fever in Cuba for about a month, followed by dysentery. Is still suffering from the diarrhea which followed the dysentery and the patient is much emaciated and very anemic. Before going to Cuba he noticed a small pimple on his neck. Just before leaving Santiago, swelling of the neck began in the connective tissue, at the site of the pimple, and has progressed steadily. Examination of the cavity of the mouth does not reveal a source of infection. There can be but little doubt that the minute furuncle, which proved harmless as long as the patient remained in good health, became the focus of infection of the underlying connective tissue which was made more susceptible to infection by the effects of disease. A large fluctuating swelling in the neck, just below the angle of the jaw, marks the location and extent of the connective tissue abscess. Pain has never been severe. Edema, but no redness of skin. All of the local symptoms indicate a slow, subacute inflammation of the deep connective tissue. The patient was etherized and through drainage was established, the drainage tube being placed in an oblique direction from the floor of the abscess to a point opposite and behind. A large quantity of creamy pus was evacuated and the cavity thoroughly washed out with carbolized solution and peroxid of hydrogen. A large moist antiseptic compress covered with oiled silk was applied and held in place by a bandage. Very little suppuration after operation, speedy healing of the abscess cavity accompanied by a marked improvement in the appearance of the patient.

Case 15.—P. P. Sprague, age 29, Seventh Infantry, Company I, entered the regular service seven months ago. He landed in Cuba July 10. Contracted malaria, lost flesh and strength, but continued to perform his usual duties. About three weeks ago he experienced a sense of soreness in the calf of his right leg in the region of a scar from an injury received during childhood. The soreness increased slowly in severity, and for a number of days he has suffered from a throbbing pain sufficiently severe to prevent sleep. The patient is much enfeebled from the effects of the previous disease, aggravated by the recent attack of phlegmonous inflammation. No local source of infection could be found on the most careful search. It is very probable that the scar tissue furnished the *locus minoris resistentiæ* which determined localization of pus microbes floating in the general circulation sufficient in number and virulence to give rise to a subacute phlegmonous process. The whole leg is swollen from the ankle to the knee, tense and edematous, a circumscribed inflammatory blush over the lower portion of the gastrocnemius muscle. Fluctuation deep seated, somewhat obscure and diffuse.

The diagnosis made at the time, was deep-seated phlegmonous abscess, involving the connective tissues between the deep seated muscles of the leg. August 29, under ether unesthesia the abscess was opened by an incision over the posterior aspect of the leg in the median line, at a point where the muscle terminates in tendon; a large quantity of thin bloody pus escaped. As it was found impossible to make a counter opening in the upper recess of the abscess cavity by the use of forceps, peroxid of hydrogen was injected through the opening to distend the abscess cavity sufficiently to facilitate incision from without. The second incision was made in the usual way over the upper third of the fibula and a counter opening established on the tibial side, effecting in this manner efficient through drainage below and from side to side. Digital exploration through the three openings located the abscess correctly anatomically. In exploring the interior of the abscess the tibia and fibula could be distinctly felt. The abscess cavity was disinfected in the usual way and after applying the wet antiseptic compress, the patient was returned to his cot and the limb placed in an elevated position. The final recovery of the patient was retarded by several severe attacks of malaria during one of which the mercury reached 106 F. The chills and fever yielded to large doses of quinin.

Case 16.—Henry H. Mix, age 21, Third Infantry, Company F, enlisted three months ago. On June 6 last, while on parade had an attack of heat exhaustion followed by diarrhea for several days. At Tampa, June 8, two days later, he was put on sick list for two furuncles behind the left knee. These healed promply. July 10 on reaching Cuba, he suffered from furuncles on buttocks, also malarial fever and diarrhea. At this time an abscess formed in the right popliteal space, which pursued an insidious, chronic course. At the time the patient reached Montauk, he was very anemic and almost reduced to a skeleton, and the abscess had opened at different points. The subcutaneous tissue was extensively undermined, and through the openings the fungous lining of the cavity could be distinctly seen. The abscess cavity discharged profusely and extended from the middle of the thigh to the upper portion of the calf of the leg. August 29, the sinuses were enlarged, a number of counter-openings made and free tubular drainage established. The abscess cavity was thoroughly disinfected and a large moist antiseptic compress applied. As there was some tendency to contraction of the knee joint, the limb was placed in a straight position and immobilized by the use of a well padded anterior wire splint so applied that the abscess could be exposed and treated without disturbing the limb. Malarial fever, which developed on the second day after the operation, retarded the healing process, and for a few days threatened the life of the patient. After the fever was under control by the administration of large doses of quinin, a satisfactory process of repair set in, which soon effected healing of the abscess and restoration of tisssues lost by the extensive destructive process.

Case 17.—Joseph McGuire, Ninth Massachusetts Volunteers, Company C, had some febrile attack in Cuba, the nature of which is not known. He was admitted to the surgical department of the General Hospital, September 7, suffering from a superficial connective tissue abscess over left triceps about two inches below the shoulder joint. He has at the same time an alveolar abscess which is discharging through a carious tooth. The infection in this case evidently took place from the blood, as there are no traces of the existence of a local infection atrium to which the phlegmonous process could be attributed. Through drainage and moist carbolized dressing.

Case 18.—James F. Dite, age 21, First Illinois Infantry, Company H, received a severe contusion of anterior surface of right thigh from falling log near Santiago. He was treated by a Cuban doctor for rheumatism, and then sent to the Division Hospital where a swelling which had formed at the site of injury was incised, but no pus escaped. The swelling remained, and gradually increased in size. When admitted to the surgical ward his general health was precarious. Marked anemia and emaciation. The anterior aspect of the affected thigh from near the knee to the inguinal fold was the seat of a fluctuating swelling. The center of the swelling was occupied by a small granulating area marking the place where the incision was made. The abscess was underneath the quadriceps femoris muscle, and evidently the incision had not been made deep enough to reach the pus. As the skin was not broken by the injury, infection was determined by microbes floating in the circulation and their localization and growth in the contused deep connective tissue. Under anesthesia the abscess was opened at the most dependent point and a counter opening made on the opposite side with the aid of distension of the cavity by peroxid of hydrogen injection. Through drainage and thorough disinfection of the interior of the abscess cavity completed the operation. Prompt relief and improvement followed the operative intervention.

Case 19.—Dennis Riley, age 21, First District of Columbia Infantry, Company E, after passing through a rather severe attack of typhoid fever was admitted to the surgical ward suffering from multiple abscesses, varying in size from that of a pea to a walnut, involving the face and the neck. The largest abscess was above the left eyelid. All of these abscesses had their primary starting point in the subcutaneous connective tissue. Treatment by incision and drainage. Convalescence progressed without any further interruption. The location of these abscesses on the exposed part of the body would indicate that the infection had a local source, probably slight abrasions inflicted by the patient himself during the course of the fever.

Case 20.—Edwin Stockwell, aged 28, Second Infantry, Company I, was well until the day before leaving Cuba, August 10; on that day felt very weak and sick. On boarding transport had to lie down, vomited, then felt better for a time, then weak and sick and nausea and vomiting again. He was feverish all the time and slightly jaundiced, but continued on duty with the sick. Some doubt remains as to whether this attack was a mild form of yellow fever or malaria. Since his arrival here he has done duty as a nurse. Five or six days ago a furuncle developed on the middle of the posterior aspect of the right thigh, below the gluteal fold. This opened and discharged slightly, but the swelling has continued to increase in size. On examination, a crater-like defect in the skin marks the site of the primary focus of infection. From this point a red zone of inflammation extends in all directions equally to a distance of two inches. The phlegmonous progressive connective tissue inflammation had its origin from the furuncle. Such a complication would probably not have occurred if the patient's general health and power of resistance to general infection had not been impaired by the antecedent attack of fever. The

skin around the furuncle was extensively undermined. The cavity was freely laid open by a vertical incision and the necrosed tissue and infectived granulations scraped out with a sharp spoon, and after thorough disinfection was lightly packed with a strip of iodoform gauze, and a large moist compress applied.

Case 21.—John A. Johnson, aged 24, Third Infantry, Company H, enlisted eight months ago. Phlegmonous inflammation of middle finger of left hand. Three weeks ago had an attack of malarial fever in Cuba, which was complicated by diarrhea. He was treated four days in one of the hospitals, when he returned to his command for duty. The fever left him in a weakened condition. Ten days ago on leaving Santiago, he noticed a soreness over the dorsal side of the middle finger of the left hand directly over the middle joint. Cause of infection not known. An acute superficial abscess formed, attended by great pain until it ruptured. A considerable portion of the overlying skin sloughed, leaving a ragged surface with edematous red margins. On August 27, the patient was placed under an anesthetic, when a thorough examination showed that the infective process did not extend to the joint or the extensor tendon. With sharp spoon, scissors and forceps the infected tissues were removed, the resulting surface disinfected and packed with iodoform gauze and the finger immobilized on a palmar splint. The wound healed promptly and the prospects are that the finger will regain its normal functions.

Case 22.—Richter, aged 23, First Illinois Infantry, Company D, contracted typhoid fever in Cuba five weeks ago. During the fever a copious herpetic eruption made its appearance on the upper lip and about the nasal orifices. The fever left him in a greatly emaciated condition. A swelling formed in the left cheek during the last three or four days and increased rapidly in size. Pain and tenderness not well marked. The patient sought medical treatment at the surgical ward Sunday, September 11. The left cheek was the seat of a large fluctuating swelling. Diagnosis made at the time—abscess of cheek. The abscess was incised from the mouth and a large quantity of very offensive pus was evacuated. The patient was directed to resort to frequent rinsings of the mouth with a saturated solution of boracic acid and was given a furlough to enable him to return as quickly as possible to his home. Infection in this case undoubtedly occurred through the skin defects left by the herpetic eruption.

GLANDULAR ABSCESS.

In the discussion of phlegmonous abscess, infection was traced either to a *portio invasionis* or local conditions, which determined localization from local causes, in cases in which it was reasonable to suppose that the essential cause of infection existed in the general circulation. Without calling attention to the fact, it is reasonable to suppose that in the first class of patients the essential microbic cause reached the tissues through the connective tissue spaces, that is, that a direct anatomic connection existed between the primary essential infection-atrium and the seat of secondary phlegmonous manifestations. In the consideration of glandular infection it is essential to connect the infection-atrium anatomically and physiologically, with the secondary glandular suppurative conditions. We are able from the clinical history and the pathologic conditions presented in most of the cases to establish such a direct connection between the primary source of infection and the secondary glandular manifestations. I have reason to believe that in most of these cases the essential cause of infection was the streptococcus pyogenes, because it is well known that this pyogenic agent usually follows either the connective tissue spaces or the lymphatic channels in giving rise to a distant infective suppurative process.

Case 23.—Patrick Collins, age 28, Company C, Eighth Infantry, enlisted one year ago. About the middle of July, while in Cuba, had a malarial chill followed by fever. Has had fever and diarrhea, and has been on the sick list ever since. While returning on transport from Cuba he experienced soreness in the region of the left parotid gland; this symptom has been followed by the usual clinical evidences indicative of the existence of an abscess in that locality. On August 29 he presented himself at the surgical ward, and at that time it was not difficult to diagnosticate the existence of a large abscess in the region of the parotid gland. At that time, under ether anesthesia, it was easy to recognize a diffuse abscess in the parotid region. It was more difficult to decide whether this abscess was of malarial or typhoid origin. Two incisions were made, an extensive purulent product was evacuated, and efficient through tubular drainage was established. In this instance the whole gland seemed to be surrounded by the suppurative products and the through drain was passed underneath the gland that was the primary seat of the secondary field of infection. The patient improved rapidly after the operation.

Case 24.—John Williams, age 25, Ninth Cavalry, Troop F., colored, enlisted four months ago. Following a strain in lifting and exposure in rough weather, while on duty in the Camp at Tampa, Fla., he became aware of the enlargement of the inguinal glands on the right side. The glands were very painful when he was on active duty. There are no evidences of general infection of any kind and the most scrutinizing examination failed to detect any tangible source of infection in the distal side of the lymphatic circulation. On palpating, three or four inguinal glands were found distinctly enlarged with plain evidences of beginning perilymphadenitis, but no distinct abscess formation. On August 22 chloroform was administered and a curved incision made, with the convexity directed upward in such a manner as to expose the infected glands freely. The glands, three in number, honeycombed with pus were enucleated. A place for drainage was established, the wound thoroughly disinfected with iodoform, when the external incision was closed with sutures of horsehair. The wound healed promptly by primary intention.

Case 25.—George A. Roberts, Sixteenth Infantry, Company H., colored, was ill eight days with malaria in Cuba, was after that on duty until his arrival in Montauk, when he again had malarial fever. During this attack a furuncle developed on calf of the right leg and opened spontaneously. From this point a lymphadenitis started, which extends to the deep lymphatic glands in Scarpa's triangle and terminated in a lymphadenitis and perilymphadenitis. The lymphatic glands in this region, being in a state of inflammation, resulted in the formation of a tender and painful swelling four inches in length and about three inches in width. No fluctuation and no inflammatory discoloration of the skin. The patient was confined to his cot with the affected limb in an elevated position. A large compress saturated with 2½ per cent. hot solutionof carbolic acid. Applied Credé's silver ointment to be rubbed into the skin over the swelling once a day. Under this treatment the inflammatory process subsided and the prospects are, that the swelling will disappear without pus formation.

Case 26.—Frederick Warner, age 37, colored, Ninth Cavalry, Troop L, contracted chancroid about six weeks ago, while on duty at Tampa. The lymphatic glands in the inguinal region became infected and the suppurative lymphadenitis terminated in the formation of three glandular abscesses, which opened spontaneously. At the time the patient was operated upon, September 1, three fistulous openings were found, and the connective tissue was extensively infiltrated. No scars or other evidences of the primary lesion can be detected. It was plainly a case of suppurative lymphadenitis, caused by invasion with pus microbes from the external genitals. Under chloroform anesthesia the sinuses were enlarged, and the remaining broken down gland tissue and infected granulations removed by a vigorous use of the sharp spoon. The resulting wound was thoroughly disinfected, iodoformized and packed with iodoform gauze and covered with a large moist antiseptic compress of gauze, over which was placed an overlapping piece of oiled silk, and the whole dressing held in place by a bandage embracing the pelvis and upper part of thigh. The patient left the hospital a week after the operation, at which time the abscess cavities were much diminished in size and lined by vigorous healthy granulations.

Case 27.—John H. Butler, age 21, Ninth Cavalry, Troop L, colored. Tubercular lymphadenitis of submaxillary gland. Family history negative. Mother and father living; two children died in infancy; rest living and in good health. About two months ago began to have pain in right side of neck and submaxillary region, and then noticed a small, hard swelling below the angle of the jaw. Additional glands in the same region became involved. At the time he entered the surgical ward a large glandular mass, composed of several enlarged lymphatic glands, was found in the right submaxillary region. On palpation the swelling was painful, but no distinct fluctuation could be felt. Inspection of the mouth failed to reveal anything which could be regarded as an infection-atrium. The tubercular nature of the glandular affection was recognized, and a radical operation for the removal of the glands was performed September 6, the patient being under the influence of chloroform. The glandular mass was freely exposed by a semilunar incision with the convexity downward and by reflection of the cutaneous flap in an upward direction. The whole

mass was dissected out in one piece, which included not only the tubercular glands, but likewise the infiltrated connective tissue surrounding them. The submaxillary gland was exposed, and during the latter part of the operation it became necessary to cut and ligate the facial artery. The gland tissue throughout had undergone coagulation necrosis; each gland contained several foci of caseation. The wound was iodoformized and sutured throughout with horse-hair, provision for gauze drainage having been made by making a button-hole near the margin and center of the flap. Healing by primary intention.

Case 28.—Schuyler C. Black, age 31, Ninth Cavalry, Troop I, colored, enlisted four months ago. Chronic balanitis and bilateral plastic lymphadenitis of inguinal glands. In June last noticed enlargement of inguinal glands on both sides, following a small sore on the glans penis near the corona. He was treated for primary syphilis, and was given large doses of potassic iodid. At no time was there any induration at the base of the sore, which always presented the appearance of an abrasion rather than an ulcer. At no time have there been any indications of secondary syphilis. The lymphatic glands in other regions of the body are normal. The patient states that the sore has healed repeatedly, reappearing at varying intervals in the same place. Examination of the penis reveals slight phimosis, chronic balanitis which has resulted in great thickening of the mucosa lining the prepuce. The sore, which has been a source of great mental distress to the patient, appears in the form of a very superficial abrasion not larger than a split pea with ill-defined margins and no induration whatever at its base. Recently the preputial margin became the seat of a herpetic eruption. The lymphatic glands in both groins are hard, not very tender to the touch and vary in size from that of a pea to a hazelnut. September 13, typical circumcision was performed under chloroform narcosis. It is expected that the removal of the direct cause of the lymphadenitis will be followed by a speedy reduction in the size of the glands. The essential cause is to be attributed to the entrance of pus microbes into the lymph channels from the local lesions of the glans penis and prepuce which became arrested in the lymphatic filters, producing an inflammation which came to a standstill short of suppuration.

Case 29.—Robert V. Smith, age 21, Tenth Cavalry, Troop E, colored, enlisted June 20. A month ago while in camp in Florida, he noticed a number of small pimples on the scalp on the right side. These small furuncles still exist, and a week ago gave rise to a deep-seated lymphadenitis affecting the lymphatic glands in the superior posterior triangle on the corresponding side of the neck. When the patient came under observation, September 13, a large and somewhat diffuse swelling marked the location of the infected glands; evidently the connective tissue around and between the glands is secondarily implicated in the inflammatory process. The swelling is hard and tender on pressure. No signs of central softening. Evening temperature 102 F., morning temperature 100 F. Directions were given to clip the hair short, and to disinfect the entire scalp. Credé's silver ointment to be rubbed into the skin over the swelling and to apply a hot, moist antiseptic compress. The patient is anemic, for which condition Gude's pepto mangan was prescribed. There is some prospect that the removal of the source of infection and the local applications will succeed in arresting the process and in effecting resorption of the inflammatory product.

This hope was not realized, as a few days later, September 23, distinct fluctuation was felt and the abscess was incised and drained, the patient being under the influence of chloroform. Rapid improvement followed the operation.

ABSCESS FOLLOWING TYPHOID FEVER.

It is somewhat singular that among the hundreds of cases of typhoid fever, that I had an opportunity to see and examine in Porto Rico and in this great national camp, no cases of perforation have come to my notice. I kept myself in readiness to perform laparetomy at a moment's notice, but my services were never requested for this particular purpose. I have no doubt but that some of the deaths from typhoid fever were due to this cause, and that this fatal complication was either overlooked or the general condition of the patient was so grave when it occurred, that the attending physicians did not deem it advisable to send for the surgeon. In this camp we had all the necessary facilities for abdominal operations, and I was hopeful that I should have an opportunity to give surgery a fair trial in such cases, but in this I have been disappointed. The most important, and most frequent complications of our typhoid fever patients have been bedsores and abscesses. The careful and attentive nursing our patients here have received, has done much in reducing the mortality and suffering from decubitus. Frequent washing with alcohol of the parts exposed to decubitus and the use of rubber pillows, and in the worst cases, of water or air beds, have contributed much in the prevention and successful treatment of this complication. We have had however, an excellent opportunity to study the etiology and pathology of abscesses as a complication of typhoid fever. The material was abundant and interesting. It is a source of regret to me that we did not have at our disposal a well-equipped bacteriologic laboratory to enable us to study in a more satisfactory manner the contents of those abscesses. Acting Assistant-Surgeon Ewing brought his own microscopic outfit, including the different stains, and did good work in the microscopic examination of pus and other pathologic products, but we had no facilities for making cultures. He examined the contents of three abscesses in as many patients, and found as the essential bacteriologic cause the bacillus of typhoid in one and the ordinary pus microbes in the remaining two cases.

The typhoid or so-called metastatic abscesses are caused by the bacillus of typhoid fever or by pus microbes which find their way into the circulation through some infection-atrium, especially the intestinal ulcers, as the result of a mixed infection. I have no doubt that in some cases the colon bacillus finds its way into the general circulation and produces the same results. The only case of bone and joint infection that came under my observation, and that could be brought in connection with the typhoid infection occurred in the case of a young soldier recovering from a severe attack of typhoid fever.

Case 30.—William Fairweather, age 22, Company A, Twelfth Infantry, about one week after the surrender of Santiago, was attacked with fever which continued for three weeks. He reached this camp with his regiment, emaciated to a skeleton, and extremely anemic. A week ago, while moving about, he was attacked rather suddenly with a severe pain in the right sacro-iliac synchondrosis and extending to the leg on the same side. The pain in the leg subsided after a few days but increased in severity at the point where it first commenced. The pain is of a dull, aching, throbbing character. Slight swelling over and in the line of the joint. Evening temperature one degree above normal. No redness or edema of the skin. September 6, the joint was punctured with the largest needle of an exploring syringe and a 5 per cent. solution of carbolic acid was injected in different directions, so as to reach the infected tissues as far as possible. No difficulty was met with in injecting three drachms of the solution. The needle puncture was sealed with collodium and a pledget of cotton. Marked improvement followed the intra articular and parenchymatous injection. The pain and tenderness had nearly disappeared on the third day. Under tonics and stimulants the general condition of the patient improved from day to day. There is no reason to fear at this time that suppuration will take place.

This case represents one of those rare complications of typhoid fever in which a joint becomes the seat of secondary infection during the latter stages of typhoid fever or during convalescence, in which the inflammatory process often results in great destruction of tissue without pus formation. Whether or not the injection should be credited with having brought about the speedy cessation of active symptoms can not be decided, either way with any degree of positiveness. I have learned to value the therapeutic effect of parenchymatous injections of carbolic acid in the treatment of chronic or subacute inflammation of a non tubercular inflammation, and I am inclined to attribute to it in this particular and similar cases positive curative properties, the evidence of which in this case appeared so shortly after it was made.

Case 31.—C. H. Baker, aged 22, Company F, Second Massachusetts Infantry, was sick two months in Cuba with fever, malaria, headache, anorexia, diarrhea, in consequence of which he became very weak. Shortly after boarding the transport, he became delirious and has been sick with typhoid fever for three weeks. A week ago, while convalescent, he was attacked suddenly with violent pain in the right testicle which rapidly ncreased in size, reaching the dimensions of a small orange in

the course of two days. At that time, the temperature increased two degrees above normal. On the third day after the attack, the swelling was hard, very sensitive to the touch, the skin red and glossy. No chills. Under applications of lead water and opium the pain has been somewhat mitigated and the swelling slightly diminished in size. September 10, a week after the complication had set in, the patient was transferred to the surgical ward. At this time deep-seated fluctuation could be distinctly felt over the center of the swelling. Less discoloration of the skin than a few days ago. Swelling only about twice the size of the normal testicle. The abscess appears to occupy the center of the testicle. Under ether anesthesia the abscess cavity was opened at the most dependent point, and a counter-opening two inches higher up made by tunnelling the tissues from within outward with a curved hemostatic forceps, and through drainage established. The pus was of the consistence of cream and whitish in color. No transudation into the tunica vaginalis. The conditions revealed at the time of operation left no doubt regarding the parenchymatous central origin of the abscess. Microscopic examination of the pus removed showed typhoid bacilli in great abundance as the exclusive bacteriologic cause of the suppurative orchitis. The patient improved very rapidly after the operation, and was transferred in less than a week to one of the Boston city hospitals.

Case 32.—L. Gardner, age 38, Company A, Sixth Infantry, went through the Cuban campaign with two days' slight illness. He lost flesh, but felt well until he came on the transport four weeks ago, when he was attacked with fever which proved to be typhoid complicated by malaria as shown by the erratic temperature curves. Convalescence was preceded by inflammation of the left parotid gland. Emaciation marked. Spleen much enlarged. The liver dulness extends from the sixth rib to an inch below the costal arch. Lungs normal. Heart sounds clear and distinct. Pulse strong and regular. Tongue red and glazed. A week after the beginning of the attack, a large abscess had formed and fluctuation could be distinctly felt, extending from a level with the external meatus to near the angle of the jaw. At that time, September 7, the patient was etherized, the abscess opened at the lowest and highest points, and through drainage established, a large quantity of thick purulent, curdy pus escaped. The cavity was washed out with a 2.5 per cent carbolic solution and peroxid of hydrogen, and a large, moist, hot antiseptic compress applied. Improvement followed at once and ended in a slow recovery without any interruptions.

Case 33.—Patrick Collins, age 26, Eighth Infantry, Company C, has been in the service one year. About two weeks after the fight in Cuba was attacked with malaria, which was followed by typhoid. The fever has persisted since, attended by diarrhea and other symptoms indicating its nature. While on the transport on his return he complained of a sense of soreness in the left parotid region, followed by swelling and redness. Patient much emaciated and very feeble. At the time the operation was performed, August 29, the swelling extended from the external ear to near the angle of the jaw, and deep-seated fluctuation was distinct. Incision, drainage, disinfection and after-treatment the same as in the preceding case. Owing to the marked weakness of the heart's action, the patient was given two ounces of whisky before he was placed under the influence of ether. Alcoholic stimulants were administered in large and frequently repeated doses and acted very promptly in increasing the tone of the circulation and in building up the impaired nutrition. The discharge from the abscess in this, as well as the other cases of abscess of the parotid following typhoid fever, was very slight after the evacuation of the abscess contents.

Case 34.—Harold Robinson, age 28, Third Infantry, Company D, contracted typhoid fever in Cuba. He is now in the third week of the fever and has been delirious most of the time. The disease pursued almost from the beginning a very malignant course. About five days ago a swelling was detected in the region of the right parotid gland, which increased very rapidly in size, involving the skin after two or three days. The abscess ruptured on the fourth day into the external meatus, but evacuation was incomplete on account of the existence of several separate compartments in the abscess cavity, which were discovered at the time the operation was performed. The abdomen is intensely tympanitic, the skin of feet, legs and abdomen spotted with dark points of ecchymosis. The condition of the patient was critical when the operation was performed, September 10. The operation had to be performed without an anesthetic and in his ward, as he was too feeble to justify his transfer to the surgical ward. The impoverished condition of the blood made it necessary to make the incision only through the skin, completing the opening with hemostatic forceps. Free tubular drainage was established and the abscess cavity was treated in the usual way. Strychnia and alcoholic stimulants were administered freely, but the heart failed to respond and the patient died the next day. Notwithstanding that the openings were made largely by the use of blunt instruments, free oozing of blood followed the operation, which may have contributed in hastening the fatal termination.

Case 35.—Giles Potter, age 33, Second Massachusetts Infantry, had chills and fever while in Cuba, but was on duty continuously. Was still weak and ill when he came on board the transport. The parotid abscess began on transport. He is very weak and emaciated, at times delirious; temperature indicates typhoid fever. Conjunctivæ slightly jaundiced. Pulse small and thready. Spleen slightly enlarged. The abscess was incised and drained without the use of an anesthetic, in its stead a large dose of whisky was given. The pus in this case was of a green color. Patient improved rapidly after the operation and is now on the way to convalescence.

Case 36.—John Simpson, age 28, Troop K, First Cavalry, was admitted to the general hospital August 25, suffering from typhoid fever, with a temperature gradually declining until September 4, when it rose suddenly from 99.4 to 102 and 103, dropping on the 8th to 99. On admission patient had very marked roseolar eruption on abdomen and limbs. During the course of the fever numerous furuncles appeared on the forehead and back. Delirium has been a prominent feature in the case almost from the beginning. Directly following the sudden rise of temperature on September 4, soreness and swelling of the right submaxillary gland were noticed. Today, September 10, a fluctuating swelling, the size of a small apple, marks the location and size of the abscess. Operation without anesthetic. Incision, counteropening, tubular drainage, irrigation with peroxid and carbolic solution, wet carbolic dressing. Rapid improvement followed the operation and the patient is now, September 13, fairly convalescent; abscess nearly healed.

The parotid gland, of all glandular organs, is the most frequent seat of secondary infection in typhoid fever. For reasons that remain unexplained the submaxillary is seldom involved, and the sublingual is still more rarely affected. The infective process begins in the parenchyma of the salivary gland but extends rapidly to the capsule and the surrounding connective tissue, leading to a phlegmonous process which in four or five days, as a rule, terminates in a well-marked abscess with the gland as a central point. The physician must be on the alert in such cases, and resort to the use of the knife in a most cautious manner as soon as fluctuation can be detected. It is advisable to establish through drainage for the purpose of securing free evacuation and thorough disinfection of the interior of the abscess cavity. The openings should be made by cutting only the skin and underlying fascia with the knife, completing them by tunnelling the remaining tissues with a curved hemostatic forceps. Dry dressings should not be employed in such cases; nothing is more grateful to the patient and more efficient in the after-treatment than the application of a moist, hot, antiseptic compress covered with oiled silk to retain heat and moisture. The safest and most efficient solution for this purpose is a saturated solution of acetate of aluminium, but when this can not be secured, a 2.5 per cent. solution of carbolic acid or a saturated solution of boracic acid answer as excellent substitutes.

In the next case the clinical history is very defective, and it is impossible to say with any degree of certainty whether or not the parotid abscesses followed in the course of typhoid fever, or whether they were external manifestations of a general septic process that developed independently of that disease.

Case 37.—Austin Dunlap, age 19, Company H, Third Infantry, was taken suddenly ill in Tampa, about July 1, with pain in the back and joints and nausea. The disease was diagnosticated at the time as malaria. He was sent to quarters, and after four days returned to duty. On arrival at this camp, August 14, had three severe chills during the first twenty-four hours and has been very sick since. When admitted to the surgical ward with bilateral suppurative parotitis and large bedsores, he was reduced to a skeleton. Extensive herpes labialis which near the left angle of the mouth have caused ulceration; abscess over elbow joint. Pulse rapid and very

small, temperature irregular. When first admitted the case was regarded as a forlorn one and whiskey was given in ounce doses hourly. The swelling in the parotid region, on both sides, was hard and very sensitive to the touch. Credé's silver ointment and hot antiseptic compresses constituted the local treatment. Five days later distinct fluctuation could be detected and one of the parotid abscesses was incised and free tubular drainage effected. Owing to his critical condition the operations had to be performed without an anesthetic. The next day, September 10, the opposite abscess was treated in the same manner. The patient has been placed on a water-bed and was restless and most of the time delirious. No evidences of metastasis in any of the internal organs. Under the stimulating treatment he rallied promptly and at the present time, September 13, his mind is clear and the temperature normal. Discharge from abscess cavities slight. The drains are shortened from time to time to permit early definitive healing of the abscesses.

I am confident that early operative treatment and the heroic employment of alcoholic stimulants have been the principal means in saving the life of this patient.

Case 39.—Corporal George F. Shilling, age 18, Company G, First D. C. Volunteers. Enormous typhoid abscess of arm. Family history negative. Health excellent before he went to Cuba. On August 15 reported sick at the hospital. Had been feeling ill for some days. He has been delirious most of the time since admission to the General Hospital here. The temperature has been on an average 103 degrees F., with daily variation of a degree and a half from August 19 to September 4. Since latter date the temperature at no time has been over 101 degrees F. The pulse is small, rapid and weak, tongue dry, brown and fissured. On arriving here on transport there were five large bedsores on back and numerous small abscesses of the skin. He was placed at once upon a water-bed, but the bedsores continued to still further undermine the skin. Two days ago when the nurse was dressing the bedsores, she discovered a swelling of the right arm on the outer edge of the biceps muscle. This has rapidly increased in size and now presents itself as an enormous abscess extending from the shoulder to the tendon of the biceps muscle. Fluctuation is most distinct over the outer aspect of the arm. On palpation a crackling sensation is felt, and on percussion the swelling was distinctly tympanitic. The presence of gas in the abscess cavity could not be doubted. September 12 the patient was almost pulseless, lips cyanotic, respiration shallow, and marked twitching of the muscles of the upper extremities. In the afternoon the abscess was cautiously opened above and below and a rubber drainage tube drawn through. A large quantity of an offensive gas and creamy pus was evacuated. The abscess cavity was freely irrigated with peroxid of hydrogen and 2.5 per cent. of carbolic solution and the moist, hot antiseptic compress applied. In place of an anesthetic the patient was given an ounce of whiskey, which was to be repeated hourly. Hot water bags were applied to relieve the embarrassed peripheral circulation. Contrary to our expectations, the patient rallied under this treatment and presented a much more encouraging condition the next morning, when it was reported that the temperature was nearly normal, mind clear and the pulse full and strong. Microscopic examination of the pus by Dr. Ewing revealed: 1, many cocci resembling staphyloccus pyogenes; 2, a few large capsulated cocci; 3, a few fine slender bacilli staining faintly with methylene blue. There is nothing that resembles the bacillus ærogenes capsulatus. The patient is in a fair way to recovery (September 17).

Case 40.—Fred Angier, age 23, First Cavalry, Troop I, is under treatment for typhoid fever probably during the third week of his illness. Patient is delirious and it is impossible to obtain reliable information as to duration of his sickness. Very recently the right eye became affected by an acute inflammatory process which appears to involve all of the tissues of the organ. The eyelids are swollen, red and somewhat edematous. The edema extends over the whole malar region. Exophthalmus well marked. Pupil contracted and immovable. Conjunctiva in a state of catarrhal inflammation. Hypopion. Sent to the New York Hospital, August 30, for treatment by specialist of the eye complication. This is the only case of secondary infection of eye of a typhoid character that was observed in the camp. It was a well-marked case of panophthalmitis and if the patient recovers it will be with the loss of the affected organ.

(To be continued.)

Let us have a Department of Public Health!

THE SANTIAGO CAMPAIGN.

MEDICAL EXPERIENCE WITH THE RETURNED SOLDIERS OF THE DISTRICT OF COLUMBIA U. S. V. REGIMENT.

BY LOUIS KOLIPINSKI, M.D.
WASHINGTON, D. C.

The following medical histories of soldiers of the District of Columbia U. S. V. Regiment which were gathered whilst treating these cases after their return to Washington, D. C., may be of interest for several reasons. The testimony shows with uniformity and consistency that the health of these men remained good at Camp Alger, at Chickamauga, at Tampa, on the voyage to Cuba and in the eight days spent in the trenches in front of Santiago; that they first became sick after having been encamped on San Juan hill four or five days or more and that there they were the victims of malarial fever—intermittent or remittent—accompanied or followed by diarrhea; that none of them contracted typhoid fever in Cuba, and that this infection occurred on the transports returning them to the United States or more probably after their arrival at Montauk. The following itinerary—furnished by the commanding officer, Colonel Harries—is necessary for comparison with the records of the cases:

Regiment mustered in May 17, 1898; left Washington (Camp Alger) May 21; left Chickamauga May 23; arrived at Tampa June 1; embarked for Cuba July 2; landed July 10; to the front July 11; in the trenches to July 19; on San Juan hill July 19; embarked for Montauk, Second and third Battalions, August 19; First Battalion, August 23; arrived at Montauk, Second and Third Battalions, August 26; First Battalion, August 28; regiment left for Washington, D. C., September 8; arrived September 9.

Case 1.—A. S., Company B, First Battalion. At Camp Alger, Chickamauga, Tampa, and in the trenches in front of Santiago was in good health. First became sick with a fever on the fourth day of the encampment on San Juan hill. Was not fit for duty whilst remaining there. His fever was accompanied with a severe diarrhea lasting ten days. On the transport returning was very weak for want of food. On the second day of the stay at Montauk had a chill and fever. Has not been sick before since early childhood and has not had typhoid fever.

On examination Sept. 16, 1898, midday temperature 102 degrees F.; exquisite malarial anemia; splenic enlargement. Ten grains of quinin muriate daily. September 17, temperature normal; feels much better. September 23, anemia almost gone.

Case 2.—F., 25 years, Company A, First Battalion. Has not had typhoid fever. Was sick one day only at Tampa on account of diarrhea. Next on the tenth day of the encampment on San Juan hill, fever and diarrhea. Was off duty one day. The diarrhea continued after his fever had disappeared. Drank the unboiled water from the San Juan river. At Montauk diarrhea and fever for three days. Marched in the review of the regiment on its return home. Sept. 20, 1898, E.T., 102 degrees F.; much sweating; diarrhea; spleen enlarged and tender. Appearance: Marked malarial anemia. Ten grains quinin muriate daily. September 21, afternoon, normal temperature; diarrhea continues. He soon recovered.

Case 3.—A. H., Company F, First Battalion. At Tampa drank boiled water; had there a mild diarrhea; at San Juan hill occasionally fever at night. Had from ten to fifteen diarrheic movements daily; drank muddy, unboiled water. At Montauk remained well except some fever for a single night. H. had typhoid fever under my care in 1893. He came back looking tanned and well—a contrast to the others. He took 10 grains quinin muriate as a prophylactic, beginning this on the fifteenth of August. September 18 and 19, light fever; quinin muriate. Septembr 21, is well, his evening temperature subnormal.

Case 4.—M. A. G., Company A, First Battalion. At Tampa

fever and diarrhea one week before they left. Gained in weight at Tampa. On the transport and in the trenches his health was good. The fourth or fifth day on San Juan hill had chills; fever and diarrhea for thirteen days. The same symptoms continued on the transport homeward. He ate nothing. Remained at Montauk two days and arrived home September 1. Marked malarial anemia; is starved; diarrhea; undigested stools; intestinal cramps. Spleen enlarged and tender. Morning temperature 102 degrees F.; quinin muriate and copper sulphate. September 3, temperature normal; diarrhea arrested. Had four febrile relapses in September and part of October. In the second relapse severe splenic pain and tenderness simulating pleurisy. With all this, rapid recovery of color and weight. Never has had typhoid fever.

Case 5.—Sergeant L., Company E, Second Battalion, became sick, for the first time, on the seventh day, on San Juan Hill; vomiting, diarrhea, fever—no chill; fever lasted three days; was off duty two days. The diarrhea ceased at the end of one day. Drank unboiled water. At Montauk had fever, headache, and pain in the back. Was sick four days, but not in the hospital. Marched in the review of the regiment on its return.

September 19 comes to be treated for malaria. Limp feeling; headache, loose bowels; had fever yesterday; today, normal temperature. Looks thin; skin brown; not anemic. Original weight 168 pounds; has lost 25 pounds. Spleen not enlarged. Quinin and copper; rapid recovery.

Case 6.—R., Company K, Second Battalion. First taken sick on the third or fourth day, on San Juan Hill. In hospital two days; daily chill for three or four days; symptoms recurring returned to hospital; had chills followed by diarrhea lasting ten days. Drank boiled spring water. At Montauk had a cold in the head. Was too sick to march in the review on account of fever and cold in the head. Did military duty at Montauk. Has not had typhoid fever. Was never sick before entering army.

September 14, heavy chill; temperature, 104F. September 15, temperature normal. Exquisite malarial anemia. Spleen slightly enlarged. Rapid recovery.

Case 7.—Sergeant G. J. M., Second Battalion, Company K, seventh day on San Juan Hill had fever for six or seven days—mostly at night. On the fourth day of the fever, diarrhea, lasting one week; occasional recurrence of fever. Arrived in Washington August 20. Is much reduced; looks like many of the others, sad and pathetic. Has diarrhea. Quinin and copper, regulated diet; rapid recovery. In Cuba drank river water; later, boiled water. Has not had typhoid fever. Did not take quinin as a prophylactic.

Case 8.—Corporal J. A. O'N., Company A, First Battalion. At Tampa some diarrhea. On the transport, outward, was sick one day. On San Juan Hill had malarial fever for three or four days with a mild diarrhea. Drank unboiled water. Marched in the review September 9.

September 10 diagnosis typhoid fever. It ran a mild course; one relapse without symptoms becoming intensified. Recovered in twenty-four days.

Case 9.—A. F. N., Company A, First Battalion. The tenth day on Juan Hill fever for five or six days and diarrhea for three or four days. Second attack two weeks later. Drank unboiled water from the San Juan river and from a spring. Was two days at Montauk; while there had fever. September 5, typhoid fever, mild; one relapse, also mild. Recovered October 7.

Case 10.—W. S., Company A, First Battalion. Tenth day on San Juan Hill, tertian intermittent, alternating with diarrhea, and lasting two or three weeks. Sick with fever and diarrhea on the transport homeward. Was on the sick list at Montauk. Marched in the review September 9.

September 12, typhoid fever; mild form. Recovered October 16.

Case 11.—Corporal B., Company L, Second Battalion. First sick the second day on San Juan Hill. Fever, followed by diarrhea; from four to six movements daily. This continued, but ceased spontaneously the second day on the transport homeward. Drank unboiled spring water. His diarrhea he said was endemic, and also amongst the Cubans. On the transport he was well and did double duty. His present fever developed at Montauk on the fourth or fifth day. Was able to march in the review of the regiment in this city. September 10, evening temperature 99F. Quinin has no effect.

September 12 typhoid fever begins and runs a mild course of three or four weeks. In this time one relapse, but symptoms not accentuated.

Case 12.—Sergeant F. A. C., Company M, Third Battalion. Diarrhea on transport to Cuba and in the trenches; indisposed one day. On San Juan Hill diarrhea returned and lasted one week. At the end of second week there, fever of five or six days duration. Then returned to duty. On transport home bound, sick two days with intermittent fever. Arrived at Montauk well. Five or six days later, fever and diarrhea, lasting three days. Arriving in Washington, was not able to stand or walk alone. Examined on the second day of his return. Morning temperature 103F. Pronounced picture of starvation and collapse. Fully developed typhoid fever of severe type; no relapse. Recovered second week in October.

THE WORK OF THE ARMY MEDICAL DEPARTMENT DURING THE SPANISH WAR.

Abridged from the Annual Report of the Surgeon-General.

MEDICAL OFFICERS.

The number of medical officers, 192, allowed by law, to the army is inadequate in time of peace. The insufficiency in time of war was met by the assignment of over 650 contract surgeons under the provision of the Act approved May 12, 1898. All volunteer regiments had three medical officers appointed by the Governors of States. Volunteer surgeons to fill the staff positions authorized by the Act approved April 22, 1898, were appointed by the President: Eight corps surgeons with the rank of lieutenant-colonel and 110 division and brigade surgeons with the rank of major; 5 of the former and 46 of the latter positions were filled by the appointment of officers of the Army Medical Department. The President also appointed three medical officers for each of the regiments of U. S. volunteer infantry, cavalry and engineers. The very small proportion of medical officers having experience of a military character impaired the efficiency of the department at the outset, but many of the staff surgeons from civil life showed great aptitude for the service, and speedily became of value as administrative and sanitary officers.

HOSPITAL CORPS.

No provision was made for hospital-corps men for the volunteer troops except that which empowered the Secretary of War (Act March 1, 1897,) to enlist as many privates of the hospital corps as the service may require. To provide this corps with the necessary number of men, recruiting officers were urged to secure suitable medical officers to effect the transfer of men from the line of the Army. General Orders No. 58, Headquarters of the Army, A. G. O., May 31, 1898, authorized the transfer of men from the line of the volunteers to the hospital corps of the regular Army upon the recommendation of the chief surgeon, and suspended the provisions of army regulations governing the hospital corps so far as they were inapplicable in time of war and with troops in the field. Commanders of corps and of independent divisions and brigades were charged with the full control of the transfer from the line, the enlistment and discharge of members of the hospital corps, the detail of acting hospital stewards and the appointment of stewards, the last limited by subsequent orders to ten stewards for an army corps in addition to those autherized for the volunteer regiments. The number of men enlisted and transferred during the war was approximately 6000.

CONTRACT NURSES.

The want of a sufficient body of trained hospital-corps men necessitated the detail of enlisted men from the regiments for hospital duty in several of the camps, and the employment of trained nurses at the general hospitals. Foreseeing the necessity for a large force of the latter I applied to Congress, April 28, 1898, for authority to employ by contract as many nurses as might be required during the war. This was promptly granted. Over 1700 female nurses have been employed, at first at the general hospitals and later at the field division hospitals, when it became evident that the field service purposes for which the latter had been originated would have to give place to the imperative need of caring for the many sick men coming from the regimental camps.

MEDICAL AND HOSPITAL SUPPLIES.

Immediately upon the declaration of war, April 21, steps were taken to obtain medical supplies for the new volunteer army. Orders were given and the manufacture expedited with the utmost dispatch. On May 3, foreseeing that it would be impossible to have ready for issue to the volunteer regiments as soon as they were mustered in, the necessary articles of field equipment, I telegraphed the Governors of the several States for authority to use the medical equipment of the National Guard in the service of the State until the Army medical supplies were ready for issue. Most of the Governors who had field equipment responded promptly and satisfactorily, but unfortunately many of the State medical department had no

such equipment. Meanwhile the officers in charge of the medical supply depots were directed to make arrangements so that supplies could be immediately obtained for 100,000 men for six months.

A field-supply table was prepared and approved by the Secretary of War, May 9, 1898. It was intended to provide for the needs of commands in active service where only a limited supply of articles could be carried, owing to the necessity of restricting transportation. But as soon as it was evident that the troops were likely to be retained in camps of instruction, notification was given that articles on the regular supply table could also be obtained.

To provide temporarily for volunteer regiments, supplies of medicines, instruments, hospital stores, stationery and miscellaneous articles, according to a prescribed list and packed in convenient boxes, were prepared at the supply depots. An important article to be provided was the first-aid packet, containing antiseptic dressings for immediate use in emergencies and intended to be carried by each individual soldier. These were promptly and liberally supplied. Whenever notice was received from the Adjutant-General's office that commands were to be moved or camps formed, I endeavored to anticipate the wants of the troops by telegraphing to the officer in charge of the nearest supply depot to forward supplies for the stated number of men according to the field supply table.

Requests from the medical officers for supplies and orders based thereon transmitted to the supply depots were largely by telegraph; and orders were given that when the supplies were needed promptly they should be forwarded by express to their destination. When a medical officer desired to purchase medical and other supplies for use in emergencies authority to do so was always granted.

The medical supply depot in New York supplied the posts in New England, the Middle States and along the Atlantic Coast, including Florida, and the troops that have been sent to and are now serving in Cuba and Porto Rico. The depot at St. Louis, Mo., supplied the States of the Mississippi Valley and the region east of the Rocky Mountains, including Texas, the large camp at Chickamauga and the camps formed at Knoxville, Lexington, Anniston, Huntsville, etc. To provide for the large aggregation of troops at Chickamauga, Ga., a subdepot, drawing its supplies from St. Louis, was organized. The officers in charge of the depots at New York and St. Louis were directed, July 8, to keep in stock 1000 iron beds or cots with a full supply of bedding ready for immediate use. The distance of San Francisco from the center of the Government was so considerable that the officer in charge of that depot was necessarily given large discretion in the purchase of supplies and the expenditure of funds.

RAILROAD AMBULANCE TRAIN.

On June 16 a railroad ambulance train, consisting of ten tourist sleepers, a dining-car, a private car and a combination car was equipped for service and placed under the command of Major Charles Richard, surgeon, U. S. A. One assistant-surgeon, two stewards, twenty privates of the hospital corps and three civilian employes were assigned to him for service. The train was amply provided with all the medicines, hospital stores and comforts required for the patients to be transported.

HOSPITAL SHIPS.

The Relief.—On April 15, 1898, I applied for a ship to be used as a hospital ship. On May 18, by direction of the President, the *John Englis* was purchased and the quartermaster's department took charge of her to prepare her for the special service required. Major George H. Torney, surgeon, U. S. A., was placed in command of the ship. Specific instructions were sent to him to provide everything needful, so that there might be no delay attributable to the medical department, and these instructions were complied with to the letter. The *Relief*, however, was unable to sail from New York until July 2. She arrived at Siboney July 7, where she received many of the wounded from the attack on Santiago.

The Missouri.—On July 1, 1898, Mr. B. N. Baker, President of the Atlantic Transport Line, Baltimore, Md., tendered the steamship *Missouri*, with her captain and crew to the Government as a hospital ship. Ten days or two weeks was estimated as needful to permit of making the necessary alterations and providing the vessel with a steam laundry, steam sterilizing apparatus and ice and carbonated plants, but it was not until August 23 that the ship was reported ready to sail, and even then a good deal of work had to be done on board during a stormy passage to Santiago.

The Olivette.—This vessel was a steamship which had been doing service as a water-boat for the fleet of transports when Lieutenant-Colonel Pope, chief surgeon of the Fifth Army corps, selected her for use as a hospital ship during the voyage from Tampa to Santiago. The equipment of one of the field division hospitals of the corps was used in outfitting her. The *Olivette* answered her extemporized purpose excellently.

THE HEALTH OF THE TROOPS.

In my opinion, the reduction of the age limit from 21 to 16 years and the haste with which the volunteer regiments were organized and mustered into the service were responsible for much of the sickness which was reported in the early days of their camp life. All military experience shows that young men under 21 years break down readily under the strain of war service; and every regiment had many of these youths in its ranks. Medical examiners were appointed to testify to the physical qualifications of each man before acceptance, but notwithstanding this, which at the time was characterized in the press as a very rigorous procedure, so many were afterward found on the sick lists of the camps unfit for service, from causes existing prior to election, that special arrangements had to be made for their discharge.

Soon after the newly raised levies were aggregated in large camps sickness began to increase progressively from causes that were so general in their operation that scarcely a regiment escaped from their harmful influence. These causes may largely be referred to ignorance on the part of the officers of the principles of camp sanitation and of their duties and responsibilities as regards the welfare of the enlisted men in their commands. Medical officers, as a rule, were also without experience in the sanitation of camps and the prevention of disease among troops. The few who knew what should be done were insufficient to control the sanitary situation in the large aggregations of men hastily gathered together. Officers and men in these camps were rife for war; and drill, parades, practice marches and military camp duties occupied the whole of their time and energies. Considerations of domestic economy and sanitation in the companies and regiments were not given proper attention, and men who were being taught to meet the enemy in battle succumbed to the hardships and insanitary conditions of life in their camps of instruction.

The sites of certain of the camps have been instanced in the newspapers as the cause of the sickness which was developed in them; but a review of the whole situation shows that it was not the site, but the manner of its occupation which must be held responsible for the general spread of disease among the troops. On April 25, 1898, foreseeing the likelihood of insanitary conditions in the camps of our newly-raised troops and with the view of preventing them, I issued Circular No. 1 from this office, impressing upon the medical officers their responsibility in sanitary matters and the necessity for a strict sanitary police, particularly in the care of the sinks and in the preservation of the camp area from contamination. But the density of the military population on the area of these contracted camps prevented the possibility of good sanitary condition. Camps of this character may be occupied for a week or two without serious results, as in the case of national guardsmen out for ten days' field-practice during the summer, but their continued occupation will inevitably result in the breaking down of the command by diarrhea, dysentery and typhoid fever.

Practically nothing was done to make the men comfortable or to remedy the insanitary conditions until these were brought to the attention of the Secretary of War by inspectors sent out by special orders from the War Department. Then the camps held for so long were abandoned, but not before the manifestations of typhoid infection were rife in them. New sites were carefully selected, regimental camps were expanded, company tentage increased and board flooring provided. Then, for the first time, the troops went into camps suitable for continued occupation.

One prominent cause of the increase of sickness in the early camps has been commented upon by only a few of our medical officers. These cite the prevalence of drunkenness and of venereal diseases due to the facilities and temptations afforded by the proximity of cities to the larger camps. They hold that if the systems of the men had not been weakened by dissipation they would not have succumbed so readily to the other influences which affected them. Malarial fevers added to the sick lists of camps in Florida, and of southern regiments in Georgia and Virginia. It was, however, typhoid fever which broke down the strength of the commands generally, the outbreak becoming distinctly manifest in July. Sporadic cases appeared in most of the cases in May and June, these cases having been brought in many instances from the State camps. In fact, some regiments, as the Fifteenth Minnesota, suffered more from the disease at their State rendezvous than any of the regiments in the large Federal camps. A few of the regi-

mental camps in the latter may be said to have escaped visitation. The sanitary conditions affecting the commands in the various camps have been studied in connection with the prevalence of typhoid fever among the men by a board of medical officers consisting of Majors Reed, Vaughan and Shakespeare, but the results of the investigation of this board have not as yet been reported in full. It appears to me, however, from a general review of the sanitary reports already filed, that the prevalence of the disease was proportioned to the insanitary camp conditions which I have referred to. My Circular No. 1, already cited, was intended to bring the danger from this fever to the notice of medical officers with the view of obviating it. The probability of its communication to soldiers in camp through the agency of flies was pointed out as a reason for insisting on a sanitary police of the strictest character.

It is well known to the medical profession that this fever is propagated by a contaminated water-supply, and it is not recognized that the great prevalence of this disease in an aggravated form in the camps of the Civil War was due to the use of surface and shallow well waters infected by typhoid excreta. To prevent transmission by the water-supply, I recommended the use of boiled and filtered water when a pure spring supply could not be obtained, and to enable an efficient filtration of suspected waters to be made, field filters of approved construction were issued on my recommendation by the quartermaster's department.

CARE OF THE SICK AND WOUNDED.

As soon as the regiments were organized into brigades and divisions preparatory to active service it became the duty of each chief surgeon of an army corps to see that the medical department of his command was organized to meet the casualties of battle. The object of the concentration of the troops was to accustom the regiments to operations in which they constituted the units of a higher organization. The experience of the Civil War demonstrated that for efficient service in an active campaign the medical department also required a higher organization. Circular No. 3, from this office, dated May 18, 1898, in specifying the duties of the various medical officers in an army corps, indicated the character of the organization to be adopted. The seriously sick were to be treated in division field hospitals (unless their transfer to a general hospital was advisable) under the care of the most experienced physicians and able surgeons on duty with each division. Medical officers left on duty with their regiments were to exercise sanitary supervision over the well men and determine whether a soldier reporting himself sick should be sent to hospital or remain as a trivial case under treatment in quarters. This consolidation of the medical force by divisions, involving as it did, the breaking up of the regimental hospitals, met with a strong opposition from regimental medical officers, particularly from those who were not detailed for special service at the division hospitals. Regimental commanders also were in many instances opposed to it, forgetful that the object of the medical department as of the line, was to get into training for field service. Similar objections were raised in 1862 and 1863 to the establishment of the division hospitals, but the Civil War lasted long enough to demonstrate the superiority of this system.

THE FIFTH ARMY CORPS.

Long before this corps embarked for Cuba its field hospitals were in condition for efficient service. Subsequent events, however, rendered valueless these preparations of the medical department. When the command embarked on the transport vessels, the baggage wagons and mules were left behind. The ambulance trains of all the divisions with a large part of the outfit of each of the hospitals were also left behind. Three ambulance wagons were taken apart and stored on one of the vessels. These did excellent service at San Juan and El Caney. Ten of the ambulances of the Third or Reserve Divisional Hospital were subsequently shipped to Cuba, where they arrived July 2, and were of value in moving the sick and wounded to the hospital at Siboney and to the hospital ships and transports. Of the property and supplies carried to Cuba a portion was not available for service at the time it was most needed, to wit: on July 1, 2 and 3, when the wounded from El Caney and San Juan were coming from the front for care and treatment. This was because, in general, no opportunity was afforded to land the medical property. Earnest efforts were made by medical officers to have supplies at the front with troops. Some having succeeded in getting their medicine chests and other articles of medical property ashore, had these carried forward on litters by hospital corps men to the camps near Sevilla, while others turned their private mounts into pack-horses for this purpose. During and after the battle at El Caney and San Juan there was an insufficiency of tents, cots, bedding and medicines due to the causes stated, but all the hospitals were well equipped for surgical work.

After the capitulation of Santiago, the troops at the front broke down rapidly under the fatigues they had undergone and the malarial influences to which they were exposed; but by this time an ample supply of tents, furniture, bedding, clothing and medical stores had reached Siboney, together with a corps of trained nurses and a force of surgeons, those sent to duty at the yellow fever hospital being immune to that disease. Meanwhile, to relieve the pressure on the field hospitals, such convalescents and sick as could bear the journey home were sent to the United States on transport vessels. This was an emergency measure to relieve the hospitals at Siboney and permit of the transfer to them of the men who were sick in regimental camps.

The transfer of troops from Santiago to Montauk Point was also an emergency measure, and the great responsibility of excluding yellow fever infection from every transport rested on the medical officers who had charge of the embarkation. Had they failed in this duty the effect would have been disastrous during the voyage to the men confined on shipboard, and the risk of importing the disease into this country would have been greatly increased.

In view of the necessity for the return of the troops of the Fifth Army Corps from Santiago, Cuba, preparations were made for encamping them at Montauk Point, Long Island. These included the establishment of temporary tent hospitals, not only for the treatment of the large number of sick brought by each command from Cuba, but for the isolation and treatment of those from transports lying under the suspicion of yellow fever infection.

The difficulties in the way of administering the affairs of the detention hospital were very great, owing to the rapidity with which the transports followed each other in their arrival. As many as four reached the Point on some days from August 13 to 31, most of them bringing sick requiring detention for medical observation; but the sick men were as well cared for and as comfortable in their cots here as afterward, when transferred to the general hospital at Montauk Point. There was an excellent steam disinfecting plant with a formaldehyde chamber attached. The laundry work was done at a steam laundry near the hospital.

The temporary hospital, which was locally known as the general hospital, Montauk Point, consisted of tent pavilions containing 1672 cots. Its personnel consisted of 40 medical men, 8 stewards, 10 acting stewards, 130 privates of the hospital corps, 15 cooks, and 50 male nurses and an average of 200 female nurses, one half of whom were Sisters of Charity. Supplies of all kinds were amply provided.

It is needless to refer at this time to the complaints of starvation which appeared almost daily in the newspapers during the occupation of Camp Wikoff, for it is now generally understood that the weakness, prostration, anemia and emaciation of so many of the troops were the results of malarial, typhoid, and yellow fever, from which the Army suffered as a consequence of its exposure to the climatic influences and local infections of Santiago and its neighborhood, pending and subsequent to the surrender of the city.

TROOPS IN THE HOME CAMPS.

The method of hospital organization in these camps was practically the same; and there was much similarity in the conditions affecting them and correspondingly in their history. Regiments reported in but few instances with the material and supplies for their medical care; but they brought sick men with them and these required immediate care. Provision had to be made for division hospitals in view of the immediate necessity. The difficulties in the way of the contemporaneous accomplishment of these two objects were great, and they were greatly augmented by the inexperience of a majority of the regimental medical officers and of many of the chief surgeons, which prevented them from seeing beyond the immediate necessity. The sick had to be cared for, and to this end medicines and other things had to be procured. Relief societies offered assistance, and this was eagerly accepted by many of these medical officers, not alone for delicacies or luxuries not otherwise provided for, but for supply table articles which could have been had from the medical purveyors in their camps, or by telegraphic requisition on the Surgeon-General. It was easier to accept what was so freely offered than to learn how to obtain the articles from the proper source. To explain their prompt acceptance of this assistance these officers referred to the red tape of the War Department methods, and the insinuation that the said methods were beyond the comprehension of the ordinary intellect was accepted by the sensational press as an explanation in full.

Meanwhile, chief surgeons of corps and divisions began the organization and equipment of their field division hospitals and ambulance companies, but they were met at the outset by the apparent impossibility of securing men for service as cooks, nurses, litter bearers, ambulance drivers, teamsters, etc. The hospital corps of the regular Army could not supply these men, because recruiting for this corps progressed slowly. The popular tendency to volunteer led men away from the regular recruiting offices. When teamsters from the volunteer regiments to the regular hospital corps were authorized, the men did not care to leave their local connections for service in the Army at large, as regular soldiers. The transfers so much desired by the medical department to enable its organization were not regarded favorably by line officers, for although every line officer will probably acknowledge as a general principle that only the most intelligent and capable men should be employed to care for the sick and wounded, he is not likely to act on this general principle when it is a question of withdrawing for such service the most intelligent and capable men of his own company or regiment.

The division hospitals of the army corps were usually established in the immediate neighborhood of the regimental camps of the divisions. The pavilions were arranged in various ways according to the configuration of the area available as a site; but in general there was a tendency to crowd the area. Surgeons in charge recognized that a tent should not be occupied by more than six patients, but sometimes this number was exceeded temporarily while waiting an increase of tentage. As a rule, the hospitals were kept in campaigning condition, that is, the tents were neither framed nor floored, until the increased prevalence of typhoid fever attracted attention to their crowded condition, when the object of their existence became suddenly changed from a school for field service to a hospital for the treatment of a local outbreak of disease.

Special diet kitchens, under the management of capable individuals, were opened at most of the hospitals. Money for this purpose was sent to them by me from funds contributed and placed at my disposal. Money was also sent directly by individuals and representatives of aid societies; and the Red Cross committees supplied ice and milk, chicken, eggs, lemons, etc. Pajamas, night shirts and other articles of hospital clothing were also provided by the Red Cross and other aid societies. Subsequently the order authorizing the commutation of the sick soldiers' ration at 60 cents rendered these hospitals wholly independent of outside assistance.

About July 20 the troops for the invasion of Porto Rico embarked and sailed. The field hospital accommodation with this expeditionary force was ample and the supplies abundant.

TROOPS ON THE PACIFIC COAST.

The troops on the Pacific Coast were concentrated mostly at San Francisco, Cal. Eighteen thousand troops were dispatched to the Philippine Islands. They were carried on twenty transport steamers, the first expedition sailing May 25. Each steamship, before being accepted by the government, was inspected by a board of medical officers, and in each instance the vessel was thoroughly disinfected before the troops went on board. The precautions taken to secure a good sanitary condition of the vessels prior to embarkation and the sanitary supervision exercised over the men during their long voyage must be credited with the excellent condition in which the troops arrived at Manila.

The want of hospital-corps men was the main cause of the failure of chief surgeons to establish their division hospitals promptly. Instead of organizing for field service, their time was occupied and their energies spent in endeavoring to procure the necessary men by enlistment or transfer. After a time, when sickness invaded the camps and the division hospitals became filled, operations for field service had to give place to the immediate necessity of caring for the sick. The division hospitals became expanded, as at Siboney and Tampa, into base hospitals with increased needs and increased responsibilities. To these I sent with the utmost dispatch physicians and surgeons under contract, to relieve the details from the regiments who were temporarily acting as hospital-corps men. At Camp George H. Thomas, Ga., the expansions of the division hospitals, under the conditions brought about by the typhoid invasion of the camps, became officially recognized as general hospitals and were promptly provided by me with the best available medical service, with trained nurses, with all permissible medical and hospital supplies and with funds for special purchases. The altered conditions under which the division hospitals were operating were immediately recognized by the chief surgeon of the Fifth Army Corps at Santiago, on the breakdown of that corps after the surrender of the city, and every effort on the part of his medical officers to care for their sick in regimental hospitals was encouraged by giving them every available facility. Similarly, in other camps, regimental hospitals were in many instances equipped to meet the necessities of the occasion.

GENERAL HOSPITALS.

Up to September 30, eleven general hospitals were established and fully manned and equipped. These had a capacity of nearly 7000 beds. At the same time certain post hospitals having good accommodations were used for the treatment of army cases generally, without alteration of their official status as post hospitals. Those, for instance, at Forts Columbus, Hamilton and Wadsworth, N. Y., and Vancouver Barracks, Wash., on the Pacific coast, were expanded in this manner. The vacant beds in the hospitals of the marine-hospital service of the Treasury Department were placed at my disposal and the civil hospitals of the country were ready on call to receive and care for the sick and wounded soldiers. These offers of hospital accommodations and medical care were accepted by me in many instances, particularly in New York, Boston, Philadelphia and Providence, to relieve the tent hospitals at Montauk Point, when crowded by the rapid transfer of sick from Santiago.

THE MEDICAL STATISTICS OF THE WAR.

The work of gathering up the records of sickness of the various commands in service during the war has been one of great difficulty. Volunteer medical officers were ignorant of the methods of keeping the records, and many failed to appreciate the importance of what was frequently regarded as "mere paper work," which had no practical bearing on the welfare of their men. Nevertheless their work in this regard must be considered as satisfactory when compared with that of the volunteer medical officers of the War of the Rebellion.

My report presents tablulations compiled from monthly reports of sick and wounded received from May to September, inclusive, and representing a strength present of 167,168 men. These give full particulars of 1715 deaths,[1] of which number 640 were occasioned by typhoid fever; 97 by malarial fevers and 393 by diarrhea and dysentery. The death rates for May and June—.46 and .70—were not in excess of those of the Army in time of peace. In July the rate became somewhat higher than that of an annual rate of 25.80 per thousand living. In August it became excessive, 4.08 for the month, equal to an annual rate of 48.96 per thousand. In September, the influence of the energetic measures taken, in July and August, to improve the health of the Army becomes manifest in the falling of the death-rate to 2.45, or the equivalent of an annual rate of 29.40. The same progression to an acme in August, with a sudden fall in September, is seen in the various ratios given under the specific titles, typhoid fever, malarial fever, and diarrheal diseases. This is exceedingly gratifying and must be credited, as stated, to the sanitary measures adopted, for our experience in the Civil War demonstrates that in the absence of these measures the high ratio of August would have been continued for many months to come.

I submit also tables of absolute numbers and of ratios by which the incidence of sickness and mortality of the regular and volunteer troops may be contrasted. From these it will be seen that the exposures of the regular troops during the Santiago campaign gave them from June to September a higher death-rate than the volunteers, and that the rate of the latter during August, the month of maximum mortality, was 3.62 as compared with 5.83 among the regular troops.

VOLUNTEER RELIEF WORK.

My guiding principle through out the war has been that relief when needed should be promptly accepted without reference to the source from which it came. The relief afforded by the National Red Cross at Siboney was promptly accepted by the surgeons on the spot, but it is evident that it was entirely inadequate to meet the emergency. This association has had full authority to send agents and supplies to all of our camps since June 9, 1898, and it has contributed supplies of various kinds in a most liberal manner for the use of our field hospitals. Other organizations which have rendered very valuable services are the National Relief Commission, having its headquarters in Philadelphia, and the Massachusetts Volunteer Aid Association, with headquarters in Boston. Both these organizations fitted out hospital ships, which were placed at my service for the transportation of our sick from Porto Rico, and I take pleasure in testifying to the valuable services rendered by the yact *May*, of the National Relief Commission, and the hospital ship *Bay State*, of the Massachusetts Volunteer Association.

[1] Reports to the Adjutant-General to Sept. 30, 1898, show 345 killed and died of wounds and 2485 died of disease in a mean strength of about 275,000 men.

SPECIAL FUND.

Sums of money varying from 33 cents, sent by Master Oliver S. Whittaker of Detroit, Mich., to $5000, by Mr. Cleveland H. Dodge, chairman of the Supply Committee, National Red Cross Society, have been sent to me to be used according to my discretion for the benefit of our sick and wounded soldiers. In all I have received $24,244.94. Among the contributors have been: The Colonial Dames of America, through the treasurer, Miss E. B. Nicholas of Washington, D. C., $3500; The Red Cross Auxiliary, No. 3, through Mrs. Winthrop Cowdin of New York, $2000, and the Woman's War Relief Association, through Mrs. Victoria Raymond, treasurer (contributed for Hospital Ship *Relief*,) $2275. This money has been sent principally to general hospitals, to chief surgeons of army corps in the field, and to commanding officers of hospital ships, to be used in the purchase of delicacies for the sick.

THE MEDICAL CORPS.

Before concluding my report of the operations of the medical department during our short and glorous war with Spain, I feel it my duty to call special attention to the efficient services rendered by the medical officers of the Army in the various responsible positions which the exigencies of the service have made it necessary for them to fill. The inadequacy in the number of trained and experienced medical officers has been a source of great embarassment to me in my efforts to meet the demands of the service; but as a rule our medical officers have performed the duties imposed upon them in a most loyal, intelligent and zealous manner. They have shared with line officers the dangers of battle, and they have encountered with unflinching courage the more difficult and protracted combat with the infectious diseases which have invaded our camps and filled our hospitals. Many of them have suffered attacks of typhoid and malarial fevers and at one time no less than 15 per cent. of the corps was disabled by sickness. Of those who accompanied General Shafter's army to Santiago, few escaped serious sickness and two of those who distinguished themselves for their devotion to duty lost their lives as a result of exposure to the malign influences which in so short a time sapped the vitality of the flower of the American Army. Credit is due not alone to those in the field. The labors of those on duty as chief surgeons of military departments, in charge of medical supply depots and in other important positions have been enormously increased and it has required unremitting effort to meet the exigencies of the war.

RECOMMENDATIONS.

The increase of the enlisted strength of the Army to a total of 60,000, and the large number of new stations to be garrisoned in the islands acquired and occupied by the United States, makes an increase in the medical corps absolutely essential. I therefore recommend an addition to the number of medical officers now allowed by law, of two assistant surgeons general, with the rank of colonel, six deputy surgeons-general, with the rank of lietenant-colonel, thirty surgeons with the rank of major, and fifty assistant surgeons with the rank of first lieutentant. This recommendation is based upon the present organization of the Army. Any increase made by Congress during the coming session will necessitate a further increase of the medical corps.

Very respectfully,

(Signed) GEO. M. STERNBERG,
Surgeon-General, U. S. A.

SOCIETY PROCEEDINGS.

The British Sanitary Institute.

Seventeenth Congress.

The seventeenth congress of the Sanitary Institute was opened at Birmingham, Eng., September 2, last. About 1500 members were present, including most of the leading lights of sanitary science and many of those engaged in the actual administration of sanitary laws, as medical officers of health, municipal engineers, sanitary inspectors, etc.

The LORD MAYOR delivered the address of welcome to the Institute.

Sir DOUGLAS GALTON, responded, and in the course of his remarks, lamented the action taken by the Government in relaxing the laws relating to vaccination. He was not one of those who held that these laws could not be relaxed but he believed they could not be relaxed under the conditions which the Government had sanctioned. They could oe relaxed were the Leicester system of isolation introduced everywhere, but without that safeguard it was absolutely wrong to have made any change.

Sir JOSEPH FAYRER delivered the presidential address, in which he reviewed the progress of sanitary science and of the Institute. He pointed out the improvement in the vital statistics of the people as shown by the reduced death rate, the enhanced expectation of life, the decline in some of the most potential causes of death and the almost total disappearance of others. The Institute had taken an important part in effecting these improvements. Its object from the outset had been the advancement of sanitary science by the promulgation of sound scientific and practical teaching of those principles on which health depended, by which life was prolonged and the physical, and thereby the moral welfare of the people promoted. It was only comparatively recently that preventive as distinguished from curative medicine had assumed the position of a science; but it was now, from a hygienic point of view, the more important of the two, although the difficulties attending its application were still considerable and largely such as arose from ignorance and incredulity. Half a century ago the great mass of the population lived and died under conditions which violated all the now well known principles on which health depended. Measures which were then regarded as mere facts or theories of no practical value were now accepted as of cardinal importance. Statesmen had learnt to realize that sanitary science came well within the domain of practical politics, and that it was an important part of the duty of executive governments to protect the people from disease which might be prevented or controlled. Acts of Parliament, officers of health and sanitary inspectors had produced a better state of things and the poor were no longer left to be a law unto themselves. When the present state of the country with its thirty-one million people was contrasted with that of the Elizabethan era with its four millions, there was ample proof of the ignorance of science in those days and of the great improvements which have taken place in these. Many of the diseases of that time had disappeared and others had been mitigated; but sudden invasions of cholera and other epidemics, even of bubonic plague, gave evidence that vigilance must never be relaxed.

The health exhibit was formally opened in the evening. The Institute all through its history has encouraged improvements in sanitary appliances by having an exhibit in competition, but the main objects of the exhibit are to educate the general public and to disseminate a knowledge of how best to effect sanitary improvements.

On the second day of the meeting the work of the Institute was divided into five conferences or sections.

In the first, or that of municipal representatives, the conditions of Birmingham were especially discussed, and papers were read on the dwellings of the laboring classes and on the desirability of having public abattoirs instead of private slaughter-houses.

In the Section of Medical Officers of Health the chairman's address counseled a cheerful acceptance of the law temporarily abolishing compulsory vaccination. If all artificial pressure were abolished there would still remain the strongest natural pressure toward vaccination in smallpox itself. To prevent the people from paying too dearly for their education by means of smallpox epidemics, medical officers of health were urged to do all in their power to promote the acceptance of vaccinal protection. One paper discussed the bacteriologic and clinical diagnosis of diphtheria, claiming that neither method was conclusive by itself, but that the two together enabled a correct opinion to be formed in the majority of doubtful cases. A paper on hospital reform condemned the practice of congregating large numbers of patients in hospital waiting-rooms as being calculated to spread disease while the medical staff were unable to give them prompt attention.

The Section of Municipal and County Engineers devoted most of its time to dwellings for the working classes. A paper on the ventilation of sewers had nothing new in its recommendation that shafts should be fixed to the tallest buildings, high factories and churches being utilized for this purpose. Another paper somewhat in advance of the times urged the sanitary advantages of motor vehicles over horse drawn vehicles.

In the Section of Sanitary Inspectors a good deal of discussion was raised by a paper which threw doubt on the practical qualifications of those certified by the Institute for appointment as inspectors. The author advocated examination by a council of prominent representatives of the profession.

The Section of Domestic Hygiene was presided over by the Lady Mayoress, who congratulated the women on having been invited to take part in such a congress. It was a sign of the progress of the times, and indicated an appreciation of the public work which women were now doing. She advocated the

election of women as guardians, factory inspectors and sanitary inspectors. The papers read were on the influence of women in household sanitation, or district nursing, its aims and methods; on the need of sanitary knowledge for nurses; on the claims of childhood and on the hygiene of dress.

Dr. ALFRED HILL on the third day delivered an address on food preservatives, in which he discussed methods for effecting preservation as by drying, smoking, salting, the use of sugar and vinegar, the exclusion of air, mineral or organic antiseptics and cold. He concluded that the use of chemic preservatives ought to be condemned altogether because they were harmful in large doses and the quantities added by food manufacturers were uncertain. Besides, their use could be supplanted by refrigeration. During the past year no less than 6,551,280 cwt. of meat had been imported from Australia, the Argentine Republic and the United States of America without the employment of any other means than refrigeration or freezing, the latter method having been employed for the meat sent from the two former countries and the chilling or refrigeration only for that from the United States.

Dr. CHRISTOPHER CHILDS delivered the most important of the addresses of the session, on the prevention of the pollution of river and streams. He instanced various reforms that were necessary and expressed a hope that all concerned in the health and welfare of the nation would urge upon Parliament the necessity of the Rivers Pollution and Prevention Bill.

On the fourth day a large number of papers were presented at the gathering.

Dr. H. SCURFIELD of Sunderland contributed, "Suggestions for the Improvement of the Milk Supply." He considered the Somerset House standard too low. It was, in his opinion, unreasonable to fix upon such a low standard because an occasional cow gave milk of this character. The fat standard should be raised to 3.25 per cent. He suggested that local authorities should draw up model regulations and issue certificates to farmers who complied with them.

Mr. JAMES MANSBERGH presented the paper of the day, however, on the Birmingham water scheme of bringing water to the city from the mountains of Wales. He described the work of damming up the water courses so as to transform the mountain valleys into lakes or storage basins which would hold sufficient for a dry period of nearly half a year. Tunnelling for thirty miles is involved in this scheme.

Professor FRANKLAND opposed the ideas advanced in several papers on the bacteriologic method of disposing of sewage. He said that in his opinion, there was nothing which could surpass the results obtained by intermittent downward filtration and irrigation.

On the social side the Institute was entertained at several lunches and receptions and was treated to excursions to Dudley Castle, the Waterworks and the sewage farms.

Chicago Academy of Medicine.

Meeting of Nov. 21, 1898.

Dr. A. LAGORIO occupied the chair.

Dr. FRANK X. WALLS presented a paper to the meeting on

DIAGNOSIS OF CHRONIC DIFFUSE PERITONITIS.

Chronic diffuse peritonitis from a clinical point of view was classified as simple, tubercular or neoplastic, not considering other infrequent varieties such as, for instance, ecchinococcus peritonitis, etc. Chronic general peritonitis usually attended with exudation, and in direct proportion to the exudation is the diagnosis involved. The essayist said that much discussion has arisen as to the existence of a simple, non-tubercular, exudative peritonitis, though cases have been described as occurring more frequently in children, by Strumpell, Henoch, Baginsky, Filatoff and others. A priori, there is no reason why we should deny a chronic simple inflammation to the peritoneum, even though we admit the condition to be infrequent. The disease develops insidiously, often after a history of trauma or exposure. Pain and abdominal distension are the most prominent symptoms, attracting attention to the peritoneum. The pain is seldom excessive, arises spontaneously, or is elicited on palpation of the abdomen. The pain is usually diffused over the abdomen, or regions of excessive tenderness may be complained of or revealed on examination. Fluid effusion is usually present, though the quantity varies within very wide limits. The fleid is usually free, but it may be encapsulated, and if examined after aspiration, reveals the characteristics of an exudate. The most characteristic differences as contrasted with ascitic fluid of non-inflammatory origin, are specific gravity above 1016, albumin in considerable quantitity and an abundant sediment rich in granular leucocytes. Moderate elevation of temperature is often present at the onset, but later the disease usually pursues an afebrile course. Other general symptoms may be present, more especially intestinal, cardiac, renal or nervous, and vary much in their kind and degree.

The differential diagnosis should exclude tubercular or cancerous peritonitis and ascites. Osler and Baginsky have reported each a case of chronic peritonitis, in which tubercle bacilli were demonstrated in the lesions during the early stages of the disease, but later. when the cases came to autopsy, careful search for bacilli or characteristic tubercular processes by competent pathologists was negative. The deduction is warranted that the absence of bacilli or tubercles in a chronic peritonitis is no indication that the morbid condition was not initiated by the bacillus of tuberculosis, and also that autoptic negative findings are quite consistent with a previous tubercular infection.

There is no characteristic picture of chronic tubercular peritonitis. At times the diagnosis is evident, while in other cases a laparotomy or postmortem reveals the presence of a tubercular peritonitis that previously had not been suspected or had been excluded. Tubercular peritonitis may arise insidiously from a latent pulmonary tuberculosis, from a caseous mesenteric or bronchial lymph gland, from an intestinal tubercular ulcer, from a hidden focus in the urogenital apparatus, more especially the testis or Fallopian tube, or from a bone or joint affection. In every case exhaustive examination for a primary focus must be instituted, and its presence or absence is of considerable weight in diagnosis, as tuberculosis of the peritoneum is rarely, if ever, primary. The usual symptoms that draw our thoughts to the peritoneum are pain, distension of the abdomen and symptoms of gastro-intestinal derangement. The pain varies much in its character, constancy and intensity: Usually dull, it may be sharp; frequently intermittent, it may be continuous; as a rule, mild, it is rarely intense. Some tenderness is generally provoked on palpating the abdomen. Vomiting, diarrhea and meteorism are frequently present, though often mild. Palpation or auscultation might elicit peritoneal rub or friction. The inflammatory effusion may be free or encapsulated; it may give rise to physical signs of isolated neoplasms in the peritoneal cavity. The palpation of the curled up omentum has a hard, firm, elongated sausage-like body, lying transversely in the epigastric region, is hardly sufficient to correct such an impression, as it is also present in carcinomatous peritonitis, though more frequent in tubercular. Sometimes the omentum is to be palpated only after evacuation of the exudate, and, instead of being in the epigastric region, it may form a prominent tumor in the right iliac region (Osler). When the effused fluid is free in the peritoneal cavity, the relation of the dulness due to the fluid and the tympany of the bowel, as elicited by percussion, gives rise to a sign described by Thomayer. This sign is a very important aid in the diagnosis of chronic peritonitis. In such cases, with the patient in the dorsal condition, we do not find the area of dulness symmetric on both sides of the abdomen with tympany in the median line, as we find in non-inflammatory ascites; but we notice that the dulness is much more extensive on the left side, and the tympanitic area greater on the right side. Thomayer reports eight cases of chronic peritonitis—five tubercular, three cancerous—in which this sign was present, and was of great value in the diagnosis. The essayist reported a case illustrating the sign of Thomayer.

The symptomatology of cancerous peritonitis is very similar to that of chronic peritonitis, and the diagnosis is to be made, as a rule, after determining a primary carcinoma. When the primary rumor is evident, these cases present no difficulty in diagnosis, but when the cancerous peritonitis develops upon a latent cancer of the stomach, bowel or ovary, the diagnosis may be extremely difficult. In every case careful examination of the stomach (physical examination and chemic analysis of the stomach contents), as well as digital exploration of the genital organs and the rectum is to be made. The age, cachexia, determination of multiple tumors in the abdomen, in addition to the other evidences of peritonitis, are the usual criteria of chronic cancerous peritonitis. Chronic peritonitis, simple, tubercular or cancerous, clinically might be simulated by a greatly dilated stomach (Leube) or distended urinary gall-bladder, but in a given case could easily be excluded by aid of a stomach-tube or catheter. Ascites (hydro-peritoneal) and ovarian cyst, perhaps more often than any other conditions, are to be considered in the differential diagnosis, and the not infrequent association of chronic peritonitis with cirrhosis of the liver is to be borne in mind.

Dr. REUBEN PETERSON—I have been much interested in Dr. Walls' paper, because, in my experience, chronic peritonitis is a disease that it is exceedingly difficult to diagnose, especially the tubercular form. I am unfamiliar with the simple chronic per-

itonitis: I have never diagnosed a case, but in quite a number of instances I have made a diagnosis of tubercular peritonitis after I had opened the abdomen. Tubercular peritonitis is of special interest to the gynecologist. The starting point in many cases is from the tube and ovary, yet before operation these organs do not give evidence of a tubercular lesion. We have adhesions and make a diagnosis of chronic salpingitis and ovaritis, and upon operation we find the peritoneum studded with tubercular masses. Williams of Johns Hopkins and Edebohls of New York have written valuable papers on cases of unsuspected tuberculosis. Specimens taken from the appendages, not considered to be tubercular, which have been subjected to microscopic examination reveal them to be of that nature. I was particularly interested in the paper because some few years ago I had a number of cases of tuberculosis of the mesenteric glands. I had three cases, two being in the same family, sisters, and the diagnosis in the first case was made after the abdomen was opened. I found the mesenteric glands enlarged and no other disease present. I operated on the sister, not because I could feel the enlarged mesenteric glands, but because her symptoms were so similar to the first case. I had one other case, the treatment of which simply consisted in opening the peritoneal cavity and draining. That was about two and a half years ago, and the patients have remained well up to this time. Acute tubercular peritonitis is very liable to result from trouble with the mesenteric glands, and this disease, when limited to the glands, is so difficult of diagnosis that it makes it particularly interesting. These three cases had indefinite pains and other symptoms referable to the abdomen, and it would seem that, given a case of somewhat long standing abdominal pain, it would be well for the surgeon to bear in mind that it may be due to a tubercular affection of the mesenteric glands. The Doctor has not gone into the treatment of chronic tubercular peritonitis, hence it can not be brought up in the discussion.

Dr. JAMES G. KIERNAN—I would like to ask Dr. Walls whether he considers ascites in the nature of a true perintonitis.

Dr. WALLS—No. In the conditions in which I have used the word "ascites," I wish it to be understood as a non inflammatory condition, the ascites representing merely an accumulation of fluid because of some probable circulatory or vascular disturbance: in other words, a dropsy of the peritoneal cavity, depending upon hepatic or portal vein disease either primary or secondary to the heart, or occasionally, as may occur, in renal disease from possibly a hydremic condition of the blood plus increased vascular permeability.

Dr. KIERNAN—Xou use the word, then, only in the sense of a hydroperitoneum?

Dr. WALLS—Yes, sir.

Dr. CHARLES S. BACON—I would like Dr. Walls to state the manner in which he uses the term simple peritonitis. The use of the term is quite important from a diagnostic standpoint. All of the inflammations of the peritoneum which arise from various sources, such as ulcers of the intestines, inflammation of the pancreas, the liver or gall duct, etc., are very important. They may be chronic in their course and hard to differentiate from tubercular peritonitis. In this connection I wish to relate briefly a case which gave me considerable difficulty in diagnosis and has a direct bearing upon the subject. A woman had long been sick and came of a tubercular family. She had nursed different members of the family who had had tuberculosis. She had a low chronic peritonitis with an abscess of the abdominal wall which naturally would lead us to suspect a tubercular peritonitis. But upon examining the contents of the abdominal abscess as well as the peritoneal exudate, there were no tubercular bacilli. There were, however, stones in the gallbladder which had first caused a pericholecystitis and later an invasion and infection of the abdominal wall and peritoneum with the colon bacillus. This case has an important bearing upon the diagnosis, and these are practically the cases we have to deal with in the differentiation.

Dr. FREDERICK S. COOLIDGE—I do not feel that we should leave this subject in its present status, and I hope further discussion will bring out some points of interest regarding the pathology of this disease. In the first place, as far as my own experience goes, Dr. Walls has stated that cancerous peritonitis occurs only in the old, whereas tubercular peritonitis occurs in the young. I have seen a good many cases of tuberculosis of the bones and joints in young children, and I must say it is extremely rare to find tubercular peritonitis occurring in these cases. There are a few cases of tuberculosis of the retroperitoneal glands, from which tubercular peritonitis might arise, the involvement of these glands being secondary to the bone or joint tuberculosis, but the condition must be extremely rare. Dr. Walls, in speaking of the diagnosis, said that in tubercular peritonitis the spleen is not enlarged as a rule, but in one or two cases of tubercular peritonitis, as shown later by autopsy, there was enlargement of the spleen from amyloid degeneration, which occurred not only in the liver, bowels and kidneys, but also in the spleen. I should like Dr. Walls to say something in his closing remarks as to the pathology of the disease before we leave the subject, and also, if he has any explanation why simple paracentesis or opening the abdomen produces a cure in many case. We were taught years ago that tubercular peritonitis was absolutely fatal; later, when the abdomen was opened and peritonitis was diagnosed, some of the cases got well. Whether the opening of the abdomen is simply a coincidence in these cases, as far as a cure is concerned, I do not know. I do not feel that the subject will have been complete until we hear from the essayist a little more fully.

Dr. WALLS (closing the discussion)—In presenting this subject to the Academy, I stated that I should deal with the differential diagnosis and consider more especially the common varieties of the chronic exudative peritonitis. I specifically stated that I should not deal with the more unusual varieties, such as echinococcus, actinomycosis, and possibly glanders, because it would prolong the discussion. The differential diagnosis of peritonitis from such conditions as pancreatic cysts, hydrops of the gall bladder, or even appendicitis, might possibly be considered clinically, but those cases would be unusual. In cysts of the pancreas, if we consider that phase of the subject, some attempt should be made to examine the digestion of the fats or look for the presence of sugar in the urine, which might be of some aid. But I did not consider the unusual forms of peritonitis, but the commoner forms of the disease. I wished to discuss more in detail the symptom reported by Thomayer, which is an important one, and which apparently has been either overlooked or has not met with favor in the hands of physicians. Indeed, it is hardly mentioned in the literature of the subject. Peritonitis following perforation is usually discussed with acute peritonitis. The disease may extend over a considerable length of time, and the symptoms would be of an acute rather than of a chronic peritonitis. In answer to Dr. Bacon's question as to the definition of simple peritonitis, I can not say any more than I have said, namely, that this name is given to the varieties of peritonitis that occur after a history of injury, sometimes exposure, or some have even considered a rheumatic tendency, in which the peritonitis develops more or less insidiously, rather slowly, and evidences of tuberculosis are absent. Some authors consider that many of those cases are really tubercular, and you will remember that reference was made to a case described by Osler and Baginsky, in which, during the course of the disease, a small portion of peritoneum was removed, carefully examined, and tubercle bacilli were found. The cases continued under observation for some time, and later died from some cachectic condition that developed. The findings were that all evidences of tuberculosis had disappeared; nothing was found that looked like a tubercular product. Cases of tubercular peritonitis may become simple. There is no good reason why we may not have a non-tubercular inflammation of the peritoneum. Possibly there is some variety of bacteria or toxic product that might bring abont so called simple peritonitis. Why a case of chronic tubercular peritonitis recovers after operation, I can not answer from a pathologic point of view, other than to suggest that in a general way it may be due to some vascular disturbance, or the removal of pressure, or to the action of the atmospheric air upon the peritoneum. It is difficult to give a satisfactory answer as to why these cases are cured. It seems to be a fact, however, that a greater number of cases of tuberculosis recover after operation than recover without operation.

Dr. COOLIDGE—Will you kindly tell us, Dr. Walls, a little more about the pathology of peritonitis.

Dr. WALLS—The pathology of tubercular peritonitis is the same as that of tuberculosis in general. It depends upon the entrance of the tubercle bacilli by means of the blood channels, lymphatics, etc., and the reactionary product varies in different cases, probably depending upon the number and virulence of the micro organism, resistance of the individual, etc. Too much time would be consumed in a detailed discussion of the pathology of chronic tubercular peritonitis, and in my paper I confined my remarks to the diagnosis.

Dr. L. LOEB read a paper on

THE TRANSPLANTATION OF THE SKIN AND THE ORIGIN OF THE PIGMENT OF THE SKIN.

Experiments were made on the ears of guinea-pigs. White skin was put on a wound in black skin and black skin on a wound in white skin. The results were as follows:

1. Black skin adhered and remained permanently. White skin did not adhere for any length of time, the longest period

of time being four and one half weeks. So we learn of an unexpected factor in transplantation. The different structure of the white and black epithelium of the guinea-pig seems to cause the different result in transplantation.

2. These experiments show that the transplanted white skin is often thrown off after the union with the underlying tissue has become complete and microscopically absolutely normal, and although in the deepest layers the number of mitoses is increased and at the edges of the piece of skin regeneration takes place. So we learn of a secondary disconnection of transplanted skin after it has grown fast and lived for some time.

3. Transplanted black epithelial cells migrate into the neighboring white epithelium, and, if white epithelium is transplanted, the neighboring black epithelial cells infiltrate the white epithelium. In this way the black skin substituted white skin. Microscopically, no signs of degeneration of the neighboring white cells can be seen. Therefore, under these conditions, apparently normal white epithelium is infiltrated and substituted by cells of the black epithelium.

These experiments, in connection with a number of other experiments and observations, prove also that the pigment of the black skin is not carried into the epithelium through cells from the connective tissue, but that it has its origin in the metabolic changes of the epithelial cells alone. This is proven by the following facts:

1. The transplanted black epithelium remained in almost all cases permanently black, and the transplanted white skin remained white as long as it adhered. Therefore, both white and pigmented epithelial cells can live, each on the tissue of the other, and yet one kind of cells will produce pigment, the other not. This shows that the nourishment which the epithelium received from the tissues upon which it is grafted does not influence the production or non-production of pigment in the epithelium. So far it is entirely unknown what food the epithelial cells require to produce pigment. Nothing proves that it must be hemoglobin. But this we know, that the main factor for the production of pigment lies in the structure of the epithelium which must be different in white and black skin. (In these experiments epithelium without any connective tissue, or with only an occasional thin layer, on which no sign of regeneration could be seen, was transplanted.)

2. We can induce black epithelium to regenerate over white connective tissue, and yet the regenerated epithelium remains permanently pigmented.

3. The originally unpigmented cutis on which black epithelium has been transplanted, or on which black epithelium has regenerated, became afterward pigmented, particularly the cells resembling chromataphores appearing only secondarily in the cutis.

4. The study of the regeneration of the black epithelium leads to the same conclusion. The pigmentation in the regenerating black epithelium takes place in a remarkably regular way. Never was the pigment carried from the connective tissue into the epithelium. There is a stage in the pigmentation, when ameboid-like chromataphores appear at the base of the epithelium, no such chromataphores having previously appeared in the cutis.

5. To the regenerating black epithelium the chromataphores behave like the basal epithelial cells. They show mitotic division just at the same places and at the same time as the ordinary basal epithelial cells show an increased number of mitoses. No such mitoses can be seen in the cutis.

6. If we observe the localization of the pigment in the normal black epithelium, we find facts which are very easily explained by this theory, but which would be hard to explain by the supposition that the pigments carried from the connective tissue into the epithelium. The hair glands of the guinea-pig were found always free from pigment. A decrease of the pigment takes place in the upper layers of the epithelium, where the Malpighian layer changes into the granular and horny layers. Chemic processes in the Malpighian layers lead to the formation of pigment. Chemic processes apparently lead to the destruction of the pigment, particularly in those places where new chemic substances arise in the skin, such as eleidia and keralin; that is to say, where chemic transformation takes place. In the hair glands of the guinea pig the chemic processes probably differ from those in the epithelial cells; in these glands, correspondingly, no pigment is produced. That seems to oe the most probable explanation. The peculiar distribution of the pigment granules in the normal as well as in the regenerating black epithelium (showing a polarity of the cells) points to the same conclusion.

Dr. William L. Baum—The work of Dr. Loeb is decidedly original in its character. I was exceedingly interested in the paper, for the reason that it corroborates to a great extent clinical experience in regard to the skin in colored individuals; that is, there are evidently qualities present in the skin of colored individuals different from those in whites. We find this to be true in the greater number of diseases characterized by rapid exfoliation of epidermal cells; they are never so marked in the colored races as in the white. It is also not of the same character as in the white skin. One fact, which has always been of considerable interest to me, and which is explained by these investigations, is that in the colored races the skin pigmentation recovers after stimulation in scar tissue where the scar itself has been devoid for a long period of time of pigmentation. The reason why there could not be this skin pigmented condition present in the follicles of the skin is explained by Dr. Loeb's work. The follicles are after all lined by the stratum granulosum, which, according to his investigations, does not contain epithelial cells, and therefore does not in the beginning have the same chemic conditions present. The pigmentation of skin has been a bone of contention among dermatologists for many years, and no satisfactory conclusion has been reached as to the origin of the pigment. The Doctor's explanation is not only an ingenious one, but is borne out by the results of his own investigations.

Dr. W. X. Sudduth—This paper is one of great interest from an embryologic standpoint, although that phase of the question was not dwelt upon to any great extent. It seems to me, that the experiments the Doctor has carried on admirably demonstrate the truth of the old theory of the individuality of cell life; and another point, that pigmentation is a local and transitory condition rather than a permanent one. We know the skin is divided into two layers, the epidermis and the cutis vera, and these two layers arise from two separate layers of the blastoderm, the external and middle layer, and the cells in these two separate layers have separate characteristics. The epidermis has three distinct layers, the stratum Malpighii, stratum granulosum, and stratum corneum. The two outer layers are older stages of development of the stratum Malpighii which is the deeper or infant layer of the epidermis. The pigment is the deepest layer of the epidermis, and it is there that we find pigmentation most marked. As the cells become older and grow toward the surface they lose their pigmentation, until when they reach the surface there is almost no pigmentation present. This would seem to indicate that the protoplasm, as found in the stratum Malpighii, has a selective action upon the coloring matter that may be found in the serum of the blood which is exuded at that point and taken up by the deepest layer or cells and transformed into pigment. The same selective action takes place in the coloring of the red blood corpuscles. It is perfectly reasonable to expect the epidermal cells of the stratum Malpighii to have the same power of selection, and they would get pigment out of the vegetable coloring matter of the serum that is found in contact with them. It is true that there are no blood-vessels which pass through the basement membrane, so-called, into the epidermis itself. It is also true that the cells of the epidermis are permeated by canals in all directions through which the serum of the blood passes. That point has been demonstrated very nicely by quite a number of observers, and I have beautiful photomicrographs showing those canals and the separation of the cells by those canals, so that the process is not necessarily one of osmosis, but of direct channel circulation independent of blood-vessels, no blood corpuscles, however, being found in the epidermis.

In 1885, in connection with Dr. Garretson, now dead, in Philadelphia, I carried on a line of experiments in this direction, following operations for epithelioma and other tumor conditions, to substantiate the theory of Dr. Garretson, that if the scar should be covered over with epidermis there was less possibility of return of the tumor. We made a great many experiments, and in our work we used the cuticle of a horse and scrapings from the cuticle of those students who were willing to submit to it, and among them we had the scrapings of the cuticle from the arm of a colored man, simply taking the epidermal cells, not scraping deep enough to draw any blood, which would indicate that we had not gone through the deeper layer. All these scrapings from the horse and the cuticle of the students tended to take hold and grow, particularly where antiseptic conditions were strictly observed. In the case where the scrapings were taken from the arm of the negro we had in time the development of more or less pigment, but not to the same extent as found on the original subject from which the cuticle was taken. It showed to me at that time a fact which was conclusive, namely, that the epidermal cells had the power of acting upon the fluid nourishment carried to them from the blood and manufacturing their own pigment. They had a selective action, whether they came from the deepest layer of the epidermis, the stratum granulosum or the stratum cor-

neum, and when brought in contact with the serum of the blood on a denuded surface they developed typic skin and pigment to a certain extent. These experiments were interesting to me, because it was the first time my attention had been directed to the selective action of cells, although I had held that theory for a considerable length of time. It was interesting, furthermore, because of the fact that at about that time the theory was advanced of the transmutation of connective tissue cells into epithelial cells; and the theory was also advanced that the pigmentation came from the transformation of these migratory connective tissue cells, which were supposed to enter the epithelium through the basement membrane.

Another point was brought out in my experiments regarding the stratum Malpighii, and the essayist has referred to it in speaking of the location of the pigment. The deepest layer of the stratum Malpighii, which lies in contact with the capillaries of the blood vessels, is composed of undifferentiated cells. That is, as we understand the cell, it is made up of a nucleus, cell body and cell wall, and the cells of the deepest layer of the stratum Malpighii have no cell wall, and there is no differentiation except that which is assumed in the hardening process of these cells. They lie there as a layer of nuclei in the midst of a layer of protoplasm, and differentiation of cell body comes later as the cell crowds toward the surface. As we get up toward the stratum granulosum, we have the cells divided and find a cell body and a cell wall. This division is caused to a certain extent by the channels which form between the cells extending toward the surface, but to a great extent it is mechanical. As we get nearer the surface, we have the differentiation complete. Where we find pigmentation going on there is no marked differentiation of cell body from cell body, although the nuclei are well formed and stand as palisades on the so called basement membrane. Pigmentation is located, as the Doctor has indicated, on the upper side of this basement membrane.

Dr. EMIL RIES—I am not able to say very much about grafted skin and the growth of pigment in the grafts of skin. I have done some work on pathologic skin in the human (white) being. There are a number of processes accompanied by loss of pigment and by a superabundance of pigment. One disease which I studied for a little was psoriasis, which shows very remarkable conditions of change in pigmentation. The psoriasis efflorescence looks white as a rule. This whiteness is not due to loss of pigment, but is due to air getting in between the scales of skin, which scale off from the surface, so that this surface then reflects light more than the original healthy skin does. But when we scrape off these scales we find that the skin underneath looks paler, whiter than the surrounding skin. On microscopic sections we find the pigment contained in the chromataphores, which are visible in the human skin. The chromataphores in the psoriatic efflorescence are quite as frequent and quite as full of pigment bodies as the surrounding skin. The fact is that in some cases the chromataphores are more frequent than in normal skin. In the cell layers of the epidermis itfelf, there is less pigment in the psoriatic skin than in the surrounding healthy skin. Some interesting observations are to be noted of psoriatic skin when the chrysarobin treatment is used. You doubtless have seen cases treated with chrysarobin where the surrounding skin at first assumes a very dark color, while the psoriatic efflorescence looks white, stands out very pale in comparison with the surrounding skin. If you examine such skin microscopically, you do not notice any further change. The change of color is not due to any change in the pigment in the cell layers of the epidermis or the chromataphores. The discoloration is not due to a change in the pigmentation contained in the cells of the normal epidermis, but it is due to the artificial substance which we apply to the skin, and it is not proven that there are any marked changes in the chromataphores or in the pigment contained in the skin. When the psoriasis heals and the diseased skin returns to its normal condition, we do not notice any difference between the original effloresence and the surrounding skin as far as pigmentation goes. The greater number of chromataphores, which are present in diseases underneath the efflorescence disappear. I have experimented on pigment in the chromataphores and in the skin, and I have tried to find whether there were any special changes in their micro chemic reactions, etc., but I was not able to find them. A great many investigators have worked on the pigmentation of the skin in processes which are characterized by loss of pigment, partial albuminismus, defects of pigment after papular syphilis, the premature turning gray of the hair, and other conditions, but it would take us too far to discuss all of those conditions. But from a pathologic standpoint, the changes in the chromataphores are marked. The presence or absence of pigment in the epidermis is an important point. Among the skin pathologists the generally accepted theory was that the chromataphores bring the pigment into the epidermal layers. When we learn that the epidermal layers themselves produce this pigment, we will have to look at the chromataphores in an entirely different light. The question arises, what is the function of the chromataphores? Dr. Loeb has found that the epidermal cells begin to migrate into the connective tissue. Now, it is perfectly possible that the chromataphores are originally epithelial cells, although I am not able to make any positive or definite statement regarding that point.

Dr. JAMES G. KIERNAN—I would like to ask Dr. Loeb whether, from an ethnologic standpoint, certain other factors should not be considered in connection with this subject. It is practically accepted by ethnologists, that the negro is developed from a lower phylogeny than the so called Caucasic and Mongolic races. Going down in the scale of evolution one thing is noticeable, as Dr. Sudduth has pointed out. that the cells possess in certain instances greater individualistic functions. In other words, in passing down in the scale of evolution, the individualistic character of the cell increases. As we pass upward in the scale of evolution, we find the cell confined to fewer functions, but losing to a considerable extent, and in many cases altogether, its powers of reproduction. I would like to ask Dr. Loeb whether that biologic fact has not something to do with the fact that he has pointed out, namely, that the pigmented cells have less tendency to degenerate into the connective tissue cells, and also whether it does not explain the fact to some extent, that a very large majority of the wounds received by negroes remain white and not pigmented. That has been my experience in making autopsies among the pauper and degenerate classes. It might explain also why there are numerous exceptions to that. Occasionally, as I have noticed, old wounds in negroes are not only not paler in type than the surrounding skin, but are actually blacker. Furthermore, I would like to know whether the same fact and some other facts that he has pointed out would not have a bearing on vitiligo as it occurs in negroes, secondary to apoplectiform conditions, paretic dementia, and secondary to true apoplexy.

Dr. C. F. PINCKARD—The point brought out by Dr. Ries in speaking of psoriasis, namely, that the color of the skin is not due to a change in the *amount* of pigment, corresponds with the condition in the iris. For instance, different colored eyes have practically the same amount of pigment; it is simply the arrangement of the pigment that makes the different colors. In the skin, the depth of the pigment below the surface is the important factor.

Dr. LOEB (closing the discussion)—I can not contribute anything which will satisfactorily answer Dr. Kiernan's questions. The influence of the nervous system upon the chromataphores has given rise to the writing of several papers. Undoubtedly, there is some connection between them, but as this work has not been fully demonstrated, it is a little premature to say anything definite about it. The view that there are channels in the epithelium is, I think, generally accepted. As to the theory or supposition that the epithelial cells select their own food from fluids that they get from the connective tissue meshes, and that this different selective power of different epithelial cells causes their difference in pigmentation, we must regard this simply as a hypothesis. As I stated in my paper, we have no fact that demonstrates that it is just hemoglobin received from the fluids which enables the epithelial cells to produce pigment. So far as my investigations go, there is very little to show that there is such a selective action on the part of the epithelial cells, as has been stated. Indeed, there are some facts entirely against it. If we regard pigmentation of the epithelial cells in the light of regeneration, we see that very often the epithelium is entirely without connection with the underlying tissues. Nevertheless the process of pigmentation takes place just the same. On the whole, we seem to agree in the belief that the epithelial cells themselves produce pigment. Dr. Ries mentioned some interesting facts about pigmentation in psoriasis. It is right that we should collect facts regarding pathologic changes in the skin, but we must consider it often difficut to give a satisfactory explanation from pathologic specimens. We do not know how this comes about. Dr. Ries also mentioned the migration of epithelial cells into connective tissue. This can occasionally be observed in the process of regeneration.

Chicago Ophthalmological and Otological Society.

Regular Meeting, Nov. 8, 1898.

Dr. COLEMAN occupied the chair. After the minutes of the previous meeting had been read and approved, the society voted to become affiliated with the Chicago Medical Society.

Dr. CLARK W. HAWLEY reported a case of traumatic catar-

act with dislocation of the lens, as follows: A young man was injured in the left eye from the concussion of a gun, about a year ago, following which cataract was first noticed, and within a few weeks. Two weeks ago needling was done, a small hole being made in the capsule. The next morning, for the first time, it was noticed that the lens was dislocated, being turned upon its vertical axis, the anterior edge touching the cornea, and the anterior surface looking toward the temporal side. It was very much swollen. On consultation with Dr. Starkey, it was decided to let it alone. The lens substance protruded through the pupil, some of it hanging over the lower border of the iris; it slowly became wholly opaque and smaller, without any irritation of the iris or pain. At present the lens is rotated backward, so that the anterior surface points almost directly forward, a little to the temporal side, and the lens is dislocated toward the temporal side. The border of the nucleus can be seen almost at the temporary pupillary edge. Reaction to light and light perception and projection are good.

Dr. Bulson reported a case of mastoiditis and sinus thrombosis with operation and recovery. In conclusion, the following features were brought out: 1. The development of well-marked sinus phlebitis, with probable thrombosis after apparent recovery from abscess of the mastoid antrum, which had been thoroughly evacuated. He attributes this to infection arising from carious bottom and inner aspect of the large cell at the apex of the mastoid process, which was probably overlooked at the time the mastoid operation was performed. This carious process, easily overlooked in the mastoid antrum, owing to small area of presentation in that cavity, undoubtedly involved the inner table at the time of the mastoid operation, and if removed at that time would have obviated the necessity of a second operation. 2. The final disappearance of this phlebitis and probable thrombus without the development of other pyemic manifestations, such as pulmonary infarcts or abscesses in other portions of the body, or a fatal termination. 3. The development of an epidural abscess somewhat remote from the site of the carious process, and not discovered or suspected at the time of the second operation. This was probably occasioned by the burrowing of pus from the original mastoid abscess and subsequently becoming walled off by adhesive inflammation. 4. Demonstrations of the necessity of thoroughness in mastoid operations, which should not only include free opening of the mastoid antrum and obliteration of pneumatic structure, but careful search for and removal of small areas of diseased or carious bone.

Dr. Starkey—The case is interesting from two standpoints: 1, that of the surgeon; 2, that of the physician. It is instructive as outlining the thorough operation that is necessary in such cases. On the other hand, it shows how some cases that are apparently very desperate will recover without further operative interference. It shows, too, that desperate cases occasionally get well, and that very extensive disease processes can be relieved and restoration follow.

Dr. F. C. Hotz—There was evidently in Dr. Bulson's case thrombosis of the lateral sinus. I do not remember, in listening to the paper, whether the doctor said in exploring the sinus with a hypodermic syringe he drew any blood or not.

Dr. Bulson—I did not.

Dr. Hotz—I believe you stated you did not get any pus.

Dr. Bulson—Yes. That is the reason I suspected there might be a fibrinous clot.

Dr. Hotz—The course of infection may have been from the mastoid or the tympanic cavity. This case calls to my mind a case of thrombosis of the lateral sinus that occurred early in my practice, in which the patient had recovered apparently from an acute otitis media with perforation of the membrana tympani. He had recovered so well that at my last visit to the house, which was on Saturday, I told him that next Monday he could go down to his business. He felt perfectly well; was up and about the house until Sunday night, when he was suddenly taken with a tremendous chill, which was followed by a high temperature, and in a few hours unconsciousness. I was called in the morning (Monday) and found him unconscious, with an icteric color, high temperature, swelling behind the ear, extending downward, following the jugular vein. The patient did not recover. After several chills he died that (Monday) night. I obtained permission to open the skull. A clot was found along the sinus, adhering to the wall, but not obstructing the entire lumen. That accounted for the fact that no evidences of thrombosis had been discovered, although that fibrinous clot had certainly been forming some time; but the blood circulated through the sinus in spite of the clot, and the patient manfested no symptoms of such disturbance. Death was caused by multiple emboli in the small meningeal arteries. The thrombus extended from the sinus into the jugular vein and was decidedly friable. I saw that a large piece had broken off from the end, and in the circulation it had been split up into numerous little particles, which went from the venous into the arterial current and probably lodged in the cerebral arterioles.

Dr. Bulson (closing the discussion)—I have but few remarks to make. The case reported presented so many interesting features that I could scarcely cover them in the condensed paper presented to you this evening. The results secured were highly satisfactory in consideration of the fact that an unfavorable prognosis had been given to the members of the family prior to the second operation, my belief at that time being that the patient would die from pyemia. In answer to Dr. Hotz' question relative to exploration of the sinus with a hypodermic needle, I will say that the needle was plunged into the sinus twice without obtaining anything that would indicate the character of the vessel. I felt reasonably certain that a thrombus existed, but heeding the advice of a prominent Indiana surgeon who was present at the operation, I concluded not to open the sinus, though I think I should now do so in a similar case if opportunity presented itself. Inasmuch as a large hypodermic or aspirating needle could not be obtained promptly when desired, I could not be certain that pus or blood was not obtained because the needle was so small or because it was thrust into a well-developed fibrinous clot. Judged from the feeling and tenseness, which latter seemed to extend well down into the neck, I feel certain there must have been a thrombus there, doubtless involving the outer lumen of the vessel, if not completely occluding it. Recovery may be attributed largely to good nursing and a strong constitution, the patient being a man weighing fully 190 pounds and the picture of health. The epidural abscess was undoubtedly due to infection, probably from a portion of the carious process overlooked at the time of the original mastoid operation. The operation lends added force to the idea that a mastoid operation should be thorough. I do not believe that it is good policy or surgery to rest easy with simply puncturing a little hole in the mastoid antrum, or, as frequently happens, into a large pneumatic cell, and by the evacuation of a little pus think that the patient is going to get well without complications or further operative procedures. Where carious bone exists, and this is especially true in long-standing cases, the patient will never get thoroughly well until the carious bone is removed, and this can not be done unless the parts are thoroughly exposed so that they can be inspected with the naked eye and the operation done in a thorough and systematic manner as required. It has always been my policy to thoroughly open the mastoid antrum, and to carry the curette in every direction until solid bone is found, and as long as any soft or carious bone is detected to keep on with the operation until the same has been completely removed. Unless great care is exercised small spots or channels of carious processes may be overlooked, as was probably the case in the instance cited. Considering the gravity of the case reported and the extensive operation required for relief, I am very glad to be able to report satisfactory results and the recovery of the patient.

Dr. Coleman—With reference to dressings, speaking generally, would you pack the wound for a considerable time or for a short time?

Dr. Bulson—That depends largely upon the nature of the case and the operation. If there is considerable pus being formed I remove the dressings and irrigate. As a rule I do not irrigate. I suppose you refer to mastoid operations?

Dr. Coleman—Yer, sir, and I want to know whether you would repack a wound for two or three weeks as a rule. There are exceptions in which you might pack it for two or three days and then allow the wound to heal.

Dr. Bulson—In a simple mastoid operation I aim in the first place to establish a connection between the middle ear and the mastoid antrum, so that an antiseptic solution injected into the fistulous opening will pass out at the meatus. The wound, including mastoid antrum, is then lightly packed with a dry gauze dressing, and unless there is a rise of temperature this dressing is not disturbed for a period of four or five days, when, if the wound is found to be dry, the dressings may be removed and the fistula allowed to close. In some instances, in order to facilitate drainage, the dressings will need to be replaced frequently for several weeks.

Dr. Gradle presented a new instrument for the removal of the enlarged pharyngeal tonsil in one piece and showed some specimens illustrating its efficiency.

Just Ordinary Substitution.—Customer (in bookstore): I want to look at some bibles. Clerk (formerly with druggist): We're just out of 'em. We have something just as good though.—*N. York Journal.*

Cincinnati Obstetrical Society.

Nov. 10, 1898.

DR. A. W. JOHNSTONE reported an extirpation of a myomatous uterus. He was unable to find any ovary on the left side. There was only a small left uterine artery and absolutely no vestige of the ovarian artery upon the left side. There was only one ovary and tube. There was no evidence of previous surgery. The cervix was displaced to the left side. In doing the operation, the cervix was split and left. In this way good drainage was secured and the case recovered nicely.

DR. EDWIN RICKETTS presented a photograph of a tumor weighing sixty-five pounds, removed by total extirpation from a woman 52 years of age. Death occurred after thirty-five hours, the immediate cause of death being unknown.

DR. RUFUS B. HALL presented a specimen removed from a case of extra-uterine pregnancy. The specimen was a fetus six inches long, with the placenta forming the sac, which was not ruptured in its removal. The fetus had been dead for some time. Convalescence easy.

DR. A. W. JOHNSTONE believed that the specimen presented by Dr. Hall represented the first step toward the formation of a lithopedion. In this case the specimen showed evidence of infection, which emphasizes the necessity of surgical interference in these cases. During the meeting of the AMERICAN MEDICAL ASSOCIATION in Cincinnati, it was held by some that an operation was unnecessary in these cases, which assertion the case just reported would tend to disprove. Even a lithopedion ought to be removed, for a woman is never safe with the results of an extra-uterine pregnancy in her abdomen.

DR. S. STARK gave a brief abstract of a report that recently appeared in the *Centralblatt für Gynekologie*. The case was one of tubal pregnancy with the history of repeated ruptures. Abdominal section revealed the child free in the abdominal cavity, among the intestines. There seemed to be no reaction whatever on the part of the peritoneum. There was no amnion, and evidently the fetus had been passing its urine and discharges into the free peritoneal cavity of the mother without doing any damage. The placenta, which was adherent to the remaining portion of the tube and over the surface of the uterus and bladder, was removed with difficulty only at the end of four weeks. It took two weeks longer for the wound to heal. A ventral hernia remained, which was operated upon six or eight months later. At that time all the adhesions formed from the lymph thrown out had disappeared. The child was alive.

DR. EDWIN RICKETTS reported a case of extra-uterine pregnancy upon which he had operated. The fetus was found out among the intestines. There were no adhesions. The fetus was pale in appearance, apparently blanched. He succeeded in removing the placenta at the time of the operation.

DR. JOHNSTONE called attention to the fact that in the case of the first living child removed in the way described, the conditions found were exactly similar to those described by Dr. Stark. There were no adhesions, no amnion, and the child was free in the abdominal cavity. We must not forget that the placenta may keep on growing even after the death of the fetus. Septic infection is the greatest risk in these cases.

DR. HALL, in closing, stated that he believed there had been, in the case he reported, several hemorrhages of considerable size, and that nature had attempted in each instance to absorb the blood. After one of the hemorrhages the woman appeared as large as at the sixth month of pregnancy.

DR. MAGNUS TATE read the regular paper of the evening,

THE TRANSMISSIBILITY OF MORPHIN.

He gave a brief review of the literature and reported cases of transmissibility of drugs to the child through the mother's milk. The more important drugs affecting the child through the mother's milk are belladonna, effect constant; potassium iodid, effect not uniform; mercury, effect very feeble and only after prolonged administration; saline cathartics, effect not constant; quinin, through the use of which a fatal illness has been reported; arsenic, if given in sufficient quantity; salicylates, if given in sufficient quantity; opium, effect inconstant, but may produce toxic symptoms. A confirmed morphin-user is known by pallor, emaciation and contracted pupils. But none of these symptoms were present in the cases observed by the essayist, nor was there any atrophy of the genital organs. He believes that morphin in small doses will not affect a healthy pregnant woman differently than if she were not pregnant. Such doses constantly repeated will produce a marked effect upon the gastro-intestinal system, and this may be followed by a train of nervous phenomena, which may not only seriously affect the health of the patient but that of the fetus, and an abortion or premature labor may result. The taking of large doses means danger to life of both the patient and fetus. The essayist noted the effect of morphin, gr. $\frac{1}{8}$ to $\frac{1}{4}$, given hypodermatically to thirty women after labor; pains were good and strong and the os dilated to the size of a quarter. During the first stage pains were reduced in frequency, became lighter, and in eight cases ceased from one to two hours. During the early part of the second stage the effect was not constant; in a few cases the pains were lessened in force and strength, but in no case did they cease. Later on in the second stage, there was no effect whatever. In two cases, in which the cervix was rigid and unyielding, morphin caused relaxation and softening and labor terminated normally. In a normal case of labor, in a healthy patient, morphin does not predispose to postpartum hemorrhage when the drug is administered in ordinary doses, gr. $\frac{1}{8}$ to $\frac{1}{4}$. There were no cases of postpartum hemorrhage in the thirty cases reported. Small doses of morphin taken by the mother may not be and generally are not discovered in the milk, because the clinical evidence is not strong enough to point to the source of the existing evil. Larger doses produce such marked symptoms in the infant, that it seems rational to make the statement that morphin, if taken in sufficient quantity by the nursing woman, will readily be transmitted to the infant. For the detection of morphin in the milk, he used Kalkbrunner's test, consisting of two solutions. The first solution is ferric chlorid, grs. 30, water ℥iv; the second solution, potassium ferricyanid, grs. 2, water ℥iv. Add to the suspected fluid five or six drops of the first solution, then three or four drops of the second solution. If morphia is present, the color will change to a pale green or deep blue, depending upon the amount present. In the absence of morphia the color is a dirty gray.

DR. EDWIN RICKETTS referred to a case in which the administration of small doses of morphia to the child stopped convulsions that were probably caused by the mother receiving hypodermatic injections of morphia. It was necessary to continue the drug several weeks. The child still lives.

DR. STARK thought the case indicated that morphin does not pass through the placenta, or the child would have acquired a tolerance to the drug.

DR. JOHNSTONE thought this could be accounted for by a difference in the rapidity of elimination through the placenta and through the breast. The child might get a much larger dose through the breast than through the placenta. He reported a case in which a child was born of a mother who used morphin. The child never nursed. At times the child had irritable spells, which could only be quieted by the administration of paregoric. The child seemed to have become addicted to the opium habit. In another case morphin was given for severe after-pains. The second or third day the child seemed to go to sleep and died. It seemed likely that she child had been poisoned by morphin excreted in the milk.

DR. PALMER believes we may affect the child in utero by administering morphia to the mother, but the quantity of morphia must be much larger than would affect the child when taking the mother's breast, later on. Morphia diminishes the activity and painfulness of the contractions in parturition, and is one of the best remedies we can give when the uterine contractions are extremely painful and when there is a want of normal dilatation of the cervix uteri in the first stage of labor, but morphia is not so good as chloroform by inhalation in such cases. Another agent which has a marked influence upon the lacteal secretion is large quantities of whisky and beer. Children at the breast may be made drunk by the nurse taking too large quantities of these beverages.

Cincinnati Academy of Medicine.

Meeting held Oct. 31, 1898.

DR. C. R. HOLMES reported a case, and showed the patient, whose left eyeball had been injured by a thirty-eight-caliber ball fired at a range of two or three feet. The victim had been leaning over a table at the time, so that the plane of the anterior part of the face was directed almost horizontally backward. The ball struck the orbital plate and without splintering it or causing fracture of any part of the skull, passed downward, injuring both lids, and buried itself in the cheek, from which it was removed. It had not caused a rupture of the skin, but the force of the impaction against the eyeball had injured the inner tunics of the eye, resulting in hemorrhage into the vitreous, and a lenticular opacity. He exhibited the bullet, which was greatly flattened.

DR. HORACE WHITACRE presented a patient who had been injured some weeks previously by a severe blow on the head, the result of the latter coming in contact with the wheel of a heavy wagon. He was seen a few minutes after his injury.

was not unconscious, but exceedingly restless and irritable. The principal symptom was the slow pulse, about 52, subsequently diminishing to 46. There were no localizing symptoms and no paralysis; some little time after the injury there developed a subconjunctival hemorrhage on the left side; there was a large hematoma present on the back of the head. The symptoms becoming worse and the patient sinking into a condition of unconsciousness, it was decided on consultation with Dr. Frieberg to trephine. The second opening in the temporal region exposed a large clot between the skull and the dura. The opening was enlarged and the bleeding point tied. About two handfuls of clotted blood were taken away. The dura was not opened, as it was thought that the clot found fully accounted for the symptoms. The result, uninterrupted recovery, proved the soundness of this view.

Dr. C. A. L. Reed reported three cases of cholelithiasis. In the first case an additional diagnosis of chronic recurring appendicitis was also made. On removing the appendix he found by carrying his hand upward toward the liver that the gall-bladder was greatly distended. The primary wound was sewed up and the regular incision for gall-bladder operation was made; 380 gall-stones, remarkable for their almost uniform size, were removed. In the second case the gall-bladder was greatly distended, but on opening it no stone was found, three pints of fluid, however, exuded from the gall-bladder. Search revealed a large stone in the common duct, which was removed by a linear incision. The patient made a good recovery, but that very day, fully two months after the operation, he had presented himself again with jaundice. The speaker did not believe this to be due to another stone, but that cicatricial contraction in the line of incision of the common duct had caused a stenosis of this duct, and that another operation would be necessary to relieve this condition.

Dr. Freiberg mentioned some cases, operated on by Mc Burney, in which an opening was made into the duodenum and the stone lodged in the common duct delivered through the papilla, the object of this operation being to avoid the troublesome stenosis that had occurred in Dr. Reed's case.

Dr. Reed said that he had made the operation, but that the difficulty of knowing just what part of the gut to open, and the greater difficulty of finding the mouth of the common duct were serious objections to the operation. The third case reported by Dr. Reed was one of gall stone colic recurring at frequent intervals for twenty-five years. Operation revealed a stone impacted in the cystic duct, and a large number of smaller stones behind it.

Dr. Meyer Heidingsfeld presented a patient whom he had been treating with electrolysis for nevus. Two milleampères was the current used, conducted by a steel needle attached to the negative pole, the point of the needle reaching into the true skin so as to avoid extensive scarifying, though he admitted that cicatrization proceeded more slowly by this method than if the needle had not sunk so deeply.

Dr. Ricketts reported a case, and exhibited a specimen, of a large ovarian cyst weighing twenty-five pounds. He also showed a specimen of a large dermoid springing from an ovary.

Dr. B. F. Lyle exhibited a specimen of aneurysm of the thoracic aorta, about the size of a walnut, situated at the junction of the ascending and transverse portions of the arch. The patient had died suddenly, but the aneurysm had not ruptured. A thickened condition of both apices of the lungs was also present (examination of the sputum had proved tubercle bacilli to be present).

Dr. E. W. Mitchell reported a case of what he believed to be angina pectoris with fatal termination, in a man 58 years of age. He had never been subject to attacks before, nor did his history of the case throw any light on his present illness. His symptoms were sudden, violent, *constricting* pain under the sternum, radiating down both arms. The heart felt like it were being held in a vise. He did not fall or lose consciousness, but was very sick and nauseated. Dr. Mitchell had thought him to be suffering from an anginal attack, but the acute symptoms being over and the circulation somewhat depressed, he thought the nitrates contraindicated and gave the patient 1 30 gr. strychnia by the mouth and 1 50 gr. digitalis by hypodermic injection. The pulse rallied somewhat, but suddenly he noticed a marked blanching of the face and, feeling for the pulse at the wrist, could find none. Respiration continued fully two minutes after the entire cessation of the heart's action. Dr. Mitchell looked upon three causes in the etiology of sudden death: he ruled out the brain in this case, for the patient, after his primary attack, had conversed genially with his friends and was perfectly conscious of his surroundings. He thought that the continuation of respiration for some minutes after the heart had ceased action would rule out any involvement of the respiratory apparatus. In addition, examination of the lungs had been entirely negative. Examination of the heart had been negative also, as far as the presence of murmurs was concerned. He knew that no diagnosis could be made in this case without a postmortem examination, which he had unfortunately been unable to obtain. He might, indeed, have been suffering from an aneurysm or thrombosis of the coronary arteries. He based his diagnosis of angina pectoris entirely on the history.

Dr. T. Louis Brown reported a case of foreign body (hog's bristle) almost an inch long imbedded in the left tonsil; removed.

Meeting of Nov. 14, 1898.

Dr. C. D. Palmer read the regular paper of the evening,

WHAT IS THE PROPER FIELD OF SALPINGO-OÖPHERECTOMY?

The paper was along the line of conservatism in gynecologic surgery. As to when and to what extent we are to sacrifice the ovaries and tubes, he thought the removal of the ovaries should be done more frequently than that of the Fallopian tubes. Often in an attempt to remove the ovaries, inadvertently the tubes are also taken out. In point of danger, there is little difference whether one or both of these organs are removed. The removal of either organ on either side renders the other of the same side practically useless, in a procreative sense. Of more importance is the extent to which the ovaries are sacrificed. Their removal, as a rule, means an abrupt and immediate cessation of menstruation, an artificial menopause. The menopause of any woman, especially if young, abruptly induced, is attended with phenomena of the nervous system, more pronounced in perturbations, more enduring in results than is the natural cessation of menstruation. The menopause is commonly attended by atrophic anatomic changes in the genital organs. Exceptionally, menstruation continues indefinitely, notwithstanding attempts to completely extirpate both ovaries. Such cases may be attributed to improper ligation of the broad ligament, as to depth or location, and the unintentional leaving of some ovarian structure. The essayist advised the operation: 1, to abrogate the process of ovulation: 2, to check or modify the menstrual discharge; 3, to remove organs incurably diseased.

As to when we are justified in making a Battey operation for certain nervous diseases, the essayist believed the operation indicated only when the nervous phenomena can be traced to or are limited by ovarian action, or when some serious organic ovarian morbid change, in kind or in degree, can be detected by the bimanual touch, with or without anesthesia. He did not advise the Battey operation for dysmenorrhea, except when due to structural disease of the ovary.

As to what extent we ought to disturb the ovaries for uterine disease, he thought such an operation of well-recognized value in the treatment of small interstitial uterine fibroids. In such cases the prevention of a possible pregnancy is another argument in its favor. When a Cæsarian section is made for a seriously contracted pelvis, the essayist would advise tying the tubes and leaving the ovaries. The detection and thorough removal of the ovaries in cases of uterine fibroids of much size, is always difficult and the results very uncertain. Uterine displacements not otherwise remediable may be relieved by surgery. In such cases the appendages should be removed if found to be diseased. The uterine appendages should be removed when seriously and hopelessly involved in disease. A partly diseased tube may recover if well emptied after abdominal section, by aspiration or the passage of a probe into the ampulla followed by finger compression. Purely catarrhal salpingitis, the most frequent form, never needs section; cases of hydrosalpinx usually do; hematosalpinx and pyosalpinx almost always. In the way of medicinal and hygienic treatment, the essayist advised rest in the recumbent posture, purgation early in acute cases, by the use of salines. Daily movements should be secured. Counter-irritation, with small fly blisters, do good in chronic cases. Cold or hot applications are best for acute cases. Sthenic cases may be given minute doses of aconite or veratrum viride. Generally no internal medicine equals quinin. Opium is to be avoided as much as possible, and is best given in rectal suppositories made of the aqueous extract. Specific cases call for the hot sublimate douche, otherwise boric acid is preferable. For chronic cases no medicament is superior to ichthyol diluted with boroglycerid. Churchill's tincture of iodin may be applied to the vaginal vault in such cases. As a rule, minute doses of bichlorid of mercury are preferable to the use of iron. The bromids diminish pelvic congestion and are sexual sedatives. Hemorrhagic states of ovarian origin may call for sodium bromid. In old cases the use of electricity may resolve pelvic exudates, relieve pain and control local neurosis.

Salpingitis is almost always an outcropping of an endome-

tritis. In such cases the uterus should be curetted and packed. Follicular ovaritis should not be mistaken for cystic degeneration. In cases of cystic degeneration of the ovary, a simple puncturing of the larger cysts, after section, will answer for not a few cases. Most cases require no surgical treatment. The essayist advocates saving as many and as much ovarian structure as practicable, but believes it rare that the corresponding tube may be saved. The uterus and appendages should be removed when the uterus is so contaminated with disease that it is advisable to cut off the whole septic field and give full drainage. Thus, the operation is called for in post-puerperal cases, next in specific, and least frequently in septic non-puerperal cases.

After all abdominal sections for supposed diseases of the uterine appendages, we should carefully inspect them for macroscopic evidences of disease. Only such parts of the appendages, the ovaries in particular, should be removed as may be hopelessly diseased. The healthy side should not be disturbed unless for good and sufficient reasons. Slight cystic degeneration or cirrhosis of the ovaries is insufficient grounds for their extirpation.

In closing, the essayist inquired: Has as much consideration been given to the salvation of the uterine appendages as is devoted to the preservation of the analogous organs in the male?

Dr. C. L. BONNIFIELD believed that if more attention were paid to the acute inflammations in the beginning the abdominal operators would have less to do. He would not recommend the removal of the ovaries to stop the growth of tumors. Myomectomy and hysterectomy have been so perfected that they are much more safe than formerly, and after such operations the trouble is absolutely cured. The removal of the ovaries will stop these growths only when they can be removed the easiest. The woman never feels completely contented as long as she feels she has a tumor. Whether or not to remove the ovaries when the uterus is removed, is a question that is as yet *sub judice*. He agreed with the essayist that the ovaries should not be removed for nervous diseases, unless we can prove that they are diseased. A few cases have been reported cured by the removal of the ovaries, but such cases would probably have been cured by any extreme method, which would have produced considerable shock upon the nervous system. He had never seen a case of uterine hemorrhage, not attended by fibroid, which could not be controlled in some other way.

Dr. RUFUS C. HALL thought that frequently we erred on the wrong side in our enthusiasm to save one ovary or as much as possible of an ovary. Where we are obliged to remove one ovary for disease that is not infectious, we may often save the opposite ovary or part of an ovary. But such great conservatism is not justifiable in pus cases, either gonorrheic or septic. Dr. Hall had, on a number of occasions, left an ovary or part of an ovary with apparently good immediate results, but months or years afterward he had been obliged to remove the ovary left at the first operation, even in non-infectious cases. Five or six of his patients, in whom an ovary or piece of ovary was left, have since borne children. Dr. Hall did not believe it safe to leave the opposite tube in cases of pyosalpinx. He had never seen a pyosalpinx on one side with a perfectly healthy ovary and the tube on the other side. In cases in which there is a prolapsed ovary with a retroverted uterus, the condition should be corrected before the long continued engorgement causes adhesion.

Dr. A. W. JOHNSTONE had recently operated upon two cases in which there was only a papillomatous degeneration of the ovary to account for one to three pints of fluid in the pelvis. He believes that much of the trouble usually ascribed to the menopause is due to American gout. Often there is the history of English gout in the ancestry. If these attacks appear after the production of an artificial menopause, they would appear at any rate a few years later, after the natural menopause. He did not think it prudent to leave a piece of the ovary for the purpose of not bringing on the menopause which only holds out the prospect of holding another ovariotomy to get it out.

Dr. J. M. WITHROW heartily endorsed the conservatism in gynecologic surgery recommended in the paper of the evening, and believed there could be no question as to the utility of the removal of the ovaries for fibroids or bleeding of the uterus. The reported successes following the removal of one or part of one or both ovaries, even in cases of septic infection, certainly justifies a trial. He believes that the artificial menopause is much stormier than the natural menopause, and had never seen a case in which he felt constrained to remove the ovaries for dysmenorrhea, but he could conceive that such cases might exist.

Dr. EDWIN RICKETTS thought conservatism could be carried too far. He compared the conservatism of the essayist to the wave of conservatism that followed the general adoption of ovariotomy. In no case is the vaginal route to be preferred for the removal of the ovaries and tubes. When there is a hematoma of one ovary, it is better to remove the other even though it may appear healthy at the time. Dr. Ricketts had seen cases of fibroids develop in spite of the removal of the appendages, and total extirpation later became necessary.

Dr. E. GUSTAV ZINKE paid high compliment to the paper of the evening. He objected decidedly to the statement, by the previous speaker, that the ovaries and tubes ought never be removed by the vaginal method. He had operated on a number of so-called pelvic abscesses by the vaginal route entirely. He had a record of at least twelve cases in which he had evacuated the pus through the posterior cul-de-sac. All the patients recovered without any difficulty, and at least one of them has since given birth to a child. Of course, pyosalpinx can not be dealt with readily by the vaginal route.

Dr. PALMER, in closing, stated that he had been prompted to write the paper by the realization that oöphorectomy and salpingo oöphorectomy are done too frequently. Too many ovaries are now stored in pickling pots, which ought to be where nature first placed them. In some cases Dr. Palmer had secured good results by the curettage of the uterus in old cases of periuterine inflammation.

PRACTICAL NOTES.

Dry Sterilization of Instruments.—Metal cylinders of various lengths and sizes are used at Frankfort to hold the forceps and everything required in obstetrics. They are placed in a dry sterilizer or the oven of the cook stove and sterilized dry. The cylinders are not opened until needed and the instruments are not injured in the least by the process.—*Munich Med. Woch.*, October 25, from *Cbl. f. In. Med.*, No. 40.

Iodin in Gonorrhea.—The vagina is cleansed with boricated water, dried and painted with pure tincture of iodin every two or three days with injections of an iodized solution three or four times a day, and the lumbar and lower abdominal regions painted with iodin. After the inflammatory symptoms have subsided, a mixture of one part pure iodin to two parts glycerin is applied to the cervical canal. If the uterine cavity has been invaded, the surface is painted with the iodin after dilation of the neck. He also administers iodids internally.—*Semaine Méd.*, November 9.

Puncturing the Intestines.—Quevado suggests puncturing the intestines through the inguinal canal in case of threatening meteorism, as free from all the objections urged against puncturing in such cases. The idea was derived from observation of the postmortem emphysema in the scrotum and vulva.—*Cronica Méd. Mex.*, November 1.

Phenocoll in Malarial Fever.—Cesare Monduri reports satisfactory results with this drug in febrile conditions diagnosed as malarial. The doses of the hydrochlorate vary from 1.5 grams to 2 grams daily for adults and from $\frac{1}{3}$ to 1 gram daily for children.—*Am. Gyn. and Obstet. Jour.*, November, 1898.

Kil, the Bussian Mineral Soap.—A natural mineral soap is found around the Black Sea which is much used for sea baths, and after calcining, forms an excellent vehicle for salves, etc. It is composed essentially of silica, alum, ferric oxid, chalk and magnesium carbonate. Veliamovitch recommends it for cleansing purposes when ordinary soap is not tolerated, as in acute eczema, etc.—*Semaine Méd.*, October 26.

Peroxid of Hydrogen.—A recent communication based on five years' experience and much experimental work, lauds peroxid of hydrogen for its microbicidal and hemostatic properties, which "entitle it to the front rank in medico-surgical therapeutics, and especially in affections of the mouth and throat." It is absolutely harmless, while more strongly antiseptic than sublimate. As a hemostatic it should be indispensable to surgeons.—*Bull. de l'Acad. de Méd.*, October 31.

Sodium Bicarbonate for Hiccough.—A recent communication to the Paris Académie de Méd. reports that hiccough has always been arrested, in the long experience of the writer, with 5 grams of sodium bicarbonate in half a glass of Vichy water taken at one draught. The hiccough disappears with the eructations.—*Bulletin*, October 31.

Reviving the Apparently Dead.—Tuffier and Hallion suggest opening the thorax and rythmically compressing the heart with the hand, after all other means of artificial respiration have failed. They have succeeded in this way in reviving dogs chloroformed until all the movements of respiration and heart action had completely ceased. In a few moments the heart commences to contract spontaneously and the respiration becomes re-established.—*Semaine Méd.*, November 2.

Orthoform in Vasomotor Rhinitis.—Lichtwitz and Sabrazès ascribe the different forms of vasomotor coryza: hay-fever, nasal hydrorrhea, etc., to hyperesthesis of the pituitary gland. This can be controlled, temporarily, by cocain, but orthoform is far more effective, its influence lasting, and free from the dangers and inconveniences of cocain. They mention, among other observations, the case of a man 34 years of age, with periodically recurring nasal hydrorrhea, sneezing, etc., for six years. A single insufflation of orthoform with a Kabierski insufflator cured him in the midst of an attack, and when seen last he had had no recurrence. (*Presse Méd.*, October 12). To prevent coughing from the dry powder, *vide* JOURNAL, p. 1306.

The "Block Bed."—The inconvenience of raising a patient to apply a bandage or cast under certain parts of the body is obviated by Professor Folet's device of having the patient lie on a set of blocks of various sizes but all exactly ten centimeters high, packed close together on a table. The idea was suggested by a doll lying on an uncovered box of toy blocks. One or more of the blocks can be removed without disturbing the patient and allow the hand or bandage to be placed around the part without the slightest inconvenience. He has the seventeen blocks in his set made hollow, like drawers turned upside down, being thus light to move, and easily packed away when not in use. The weight of the patient keeps them from slipping around under him.—*L'Echo Méd.*, October 23.

Infantile Meningitis.—Carbajal writes to the *Revista Médica*, October 15, describing his successful results with a blister applied to the occipital region at the commencement of the second or paralytic period in this disease. He uses Autenrieth's salve and croton-oil, 30 to 4 gm., every four to six hours until the surface is blistered and suppurating, after which the suppuration is kept up with some simpler salve. He ascribes to this measure the recovery of all his cases since employing it, combined with the usual therapeutic measures, avoiding narcotics.

Resection of Deformed Nasal Septum.—Escat resects a C-shaped septum without perforating it completely, by injecting, after cocain, enough water to separate and distend the mucous membrane from the cartilage on the convex side (they are easily detached in the young). He then resects the convex side, including the protuberant cartilage and its membrane, at one stroke, leaving the membrane on the concave side intact. Gauze tamponade for twenty-four hours controls hemorrhage, and the operated side is soon regenerated on the membrane support.—*Munich Med. Woch.*, October 25.

Massage for Post-operative Ileus.—Häberlin has found massage through the rectum and even of the entire abdomen, very effective in promoting the passage of gas and feces after celiotomies, etc., preventing adherences and assisting convalescence. He reports one case in which an intestinal loop was evidently becoming incarcerated in the Douglas pouch, which he released by energetic massage through the rectum. He considers the fears of hemorrhage, etc., unfounded, but advises as a preliminary the usual therapeutic measures.—*Cbl. f. Gyn.*, 42.

Ferric Chlorid in Dermatomycoses.—Martin has found ferric chlorid very effective in curing pityriasis versicolor. Two or three applications of the following suppress every trace of the affection; dry ferric chlorid 5 gm., gutta percha 2 gm., chloroform 20 gm. For external use. Remove the traces of the gutta percha with 10 per cent. alcholized water. He also cures erythrasma with one part chlorid to 4 parts collodion, and the inflammatory form, with a solution of 30 gm. dry ferric chlorid to 70 gm. glycerin. Cures in ten days. Trichophytiasis is also cured in an average of twenty-five days with salves or collodion applications of ferric chlorid. The stains on the skin can be removed with a solution of sodium carbonate 6 gm., glycerin and water āā 30 gm.—*Semaine Méd.*

Inefficacy of Cerebral Inoculations in Tetanus.—Recent experimentation at Rio Janeiro has confirmed the extreme sensitiveness of the nerve-cell to the action of the toxin and the protoplasm of the cell. If the toxin and antitoxin are injected combined, at the periphery, the stimulating effect of the latter in arousing the organism to defense, is felt before the toxin reaches the brain, and there is no infection; but if the infection has already reached the brain, the antitoxin is powerless to affect the results, whether inoculated at the periphery on in the brain itself.—*Tribuna Méd.*, August 15.

Chronic Nephritis.—Lemoine treats chronic nephritis with the following powders: lithin benzoate 50 cgm., betol 25 cgm., sodium bicarbonate 20 cgm. Make twenty similar powders, and take two or three during the day, between meals. If the urine occasionally becomes scanty and brownish with a few red corpuscles, he resorts to tannin: tannin and pulverized cinchona āā 50 cgm.; for one powder. Make twenty similar powders and take two powders a day with the meals, or, if the patient dislikes to take powders, it can be administered as follows: tannin 250 cgm., glycerin 30 gm., and syrup of bitter orange 120 gm. Take four to six tablespoonfuls at the commencement of the meals. This treatment should be kept up a long while, suspending it one week in four. He sometimes alternates the lithin benzoate and the tannin, a fortnight each.—*Semaine Méd.*, October 26.

Cystorrhaphy by Imbrication.—Juvara suggests suturing the bladder after suprapubic incision, by imbrication, that is, by overlapping stages, like tiles on a roof. The suture heals more rapidly by first intention, owing to the greater surface expanse, and he claims that it responds to every ideal requirement. His tests on dogs, which are exceptionally liable to infection from such a cause, as their bladder is located in the peritoneum, all proved extremely successful, even without the use of the sound. Experiments on cadavers showed that this method is exceptionally simple if the peritoneum is protected by pulling the upper part of the posterior surface of the bladder out through the wound with the fingers.—*Bull. de la Soc. de Chir.*, Bucarest, 1898, 1.

Cutting the Umbilicus.—Sehrwald observes that the usual haste to sever the umbilicus results in the loss to the child of a large amount of blood to which it is entitled, sometimes reducing the blood in its circulation from the 158 grams it should have with a weight of six pounds, to 58 grams. He ascribes to this fact many cases of infantile weakness and lack of resistance to disease, congenital valvular insufficiency, etc. The cord should never be cut until all pulsation has ceased, and this applies with extra force to the apparently dead, in whom the circulation should be stimulated with warm compresses on the heart and the centers of heart and respiration action at the back of the neck. When the cord pulsates, proceed to artificial respiration in the usual way, with the arms.—*Deutsche Med. Woch.*, September 8.

Cellordin.—In the *Med. Press and Circular* for August 31, a writer states that the question of abdominal drainage incidentally involves the question of wound-drainage in general and the same arguments apply. If at the moment of operation the wound could be sealed with an air-tight material, which would remain so until healing was complete, primary union might be reckoned upon. With the new dressing, cellordin, described by Mackenzie in 1896, a transparent closely adherent film can be applied which has the advantage of contracting. Stanmore Bishop has reported three cases out of a large number to illustrate its advantages. They are ovariotomy, removal of appendix, and suprapubic lithotomy. Union by first intention was obtained in all, under one dressing. If perfect asepsis has not been secured the transparency of the dressing enables the place where it is faulty to be seen.

Tremor Toxin and Antitoxin.—Adamkiewicz considers that the pyramidal tracts inhibit the action of the muscles and the posterior columns incite it. The decay of the function explains the ataxia in tabes and the rigidity in lateral sclerosis. The attempt to move the rigid muscles results in tremor, which can therefore be considered the result of both anatomic and functional lesions of the pyramidal tracts. The tremor in the chill of commencing infective diseases is induced by the effect of the toxin on the pyramidal tracts. As this chill has a particularly deleterious effect on the organism, some means should be sought to arrest it. He has found that the addition of carbolic acid to neurin ($C_5H_{13}NO$) will deprive it of its tremor-producing property while not affecting its other toxic effets, and he suggests that it may be possible to separate the tremor-producing property of the toxin in acute infective diseases from the rest, and paralyze it in a similar manner.—*Berlin Klin. Woch.*, October 3.

Arsenic as an Alterative.—Dr. T. W. Schaeffer, in the *Charlotte Medical Journal*, says that arsenic increases the elimination of nitrogen by the simultaneous diminution in the absorption of oxygen and elimination of carbon dioxid, and causes in this way a fatty degeneration of the organs. It appears that under the influence of this poison fat is formed from the proteids. The nitrogen, with a small proportion of carbon, is dissociated from the proteid molecule, and the nitrogen-free residue is deposited as fat in the tissues. So that the so-called "alterative" rôle of arsenic in therapy may be described somewhat more modernly and intelligibly: arsenic is, in fact, a carrier of oxygen; it is an oxidizer and a deoxidizer. Hence, we judge, its beneficial effects, when taken internally in small doses, in exerting a tonic effect upon the nervous system, improving the quality of blood, being an excellent hematic, of great value in ague and chronic malarial disorders, promoting digestion, and this explains why it can often be relied upon in the many forms of dyspepsia.—*N. Y. Med. Jour.*

Treatment of Asystole.—Professor Huchard's treatment of heart disease consists of rest in bed, milk diet, and if the heart is much dilated, venesection. After two or three days of this preparation a purgative is administered: scammony 50 cg., calomel, 20 cg., in two powders, taken with half an hour interval. The day following, the patient is ready for digtalis, and all danger of intoxication is avoided by not allowing the drug to accumulate in the system. He insists upon the crystallized digitalin: 40 to 50 drops of the alcoholic solution of the Codex, at $\frac{1}{1000}$—50 drops corresponds to a milligram of crystallized digitalin. In a few hours the edemas are absorbed and diuresis is established. Three days later, if the improvement is not sufficiently pronounced, 25 to 30 drops are administered, and this dose is repeated at intervals of ten to twenty days, for several months, if necessary, respecting the long intervals. Small doses, closer together, are the reef on which the average practitioner makes shipwreck.—*Gaz. Méd. de Liége*, October 27.

Faradism for Chilblains.—Dr. Forbes Ross of London was led to try the following procedure for the relief of chilblains, and has had invariable success during several winters. Relief has been prompt in every instance. Having ascertained and localized the focus of each chilblain, resort was had to the application of the secondary current of a Faradic battery, increasing the current gradually to high strength. The application must be made directly to the affected part, i. e., both poles must be in contact with the affected area, separated only by the area occupied by the chilblain itself. Having first previously dipped the electrodes in saturated sodium chlorid solution, maintain the application of the current to each chilblain for from five to fifteen minutes. If the chilblains be watched during the application of the current the tissues will be seen to gradually blanch and the anemic area due to the pressure of the electrodes will be seen to creep outward, even though care be taken not to increase the pressure. This blanching begins after about five minutes of the passage of the current. The result of this procedure is that the itching is completely and promptly stopped by the first application, and a second, one or two days afterward, usually suffices to effect a cure. Seldom, if ever, does a third or fourth application become necessary. He has never in a single instance, in an extensive trial of this method, known it to fail to effect a cure in three or four days, to the great delight and gratitude of the victim. The treatment is handy and rapid.—*Lancet.*

Gelatin in Aortic Aneurysm.—Lancereaux of Paris, has made use of a solution of gelatin dissolved in an artificial serum for the hypodermic relief of aneurysm. In a paper before the French Academy of Medicine (London *Lancet* for October 22), he reported the results in several cases. One of his patients had an aortic aneurysm which projected anteriorly. Subcutaneous injection of a solution of gelatin in artificial serum was made, and the patient recovered. Some time previously the blood had escaped from the aneurysm and coagulated just under the skin; the patient's state was very critical, but injections of gelatin promptly brought about coagulation of the extravasated blood. In the second case the patient suffered from aneurysm of the aorta which had not come to the surface. By means of the gelatin injection treatment all the pain disappeared and the dilated superficial veins diminished in volume. Lancereaux has treated by this method many aneurysms of the aorta and one subclavian aneurysm with similar success. Two other patients who suffered from aortitis and dilatation presented, however, no amelioration. They died and the post-mortem examination showed that no coagulation had taken place in the dilated portion of the artery. The operative proceeding was as follows. A solution of 2 gms. of gelatin in 100 of saline solution is made and this is injected under the skin of the thigh into the subcutaneous cellular tissue in a dose of 250 c.c. The injection is renewed at varying intervals of time—every two days to fifteen days. As a rule, 10, 15, or 20 injections are quite enough to obtain a complete cure. The communication of these researches gave rise to a long discussion at the Academy, in which M. Huchard, Professor Hayem and Professor Fournier took part. M. Huchard had employed the method of M. Lancereaux in many cases, one of which was very serious, the pulsation of the aneurysm being very strong. A complete cure was obtained by means of 20 injections, and the sole inconvenience attaching to this treatment was that it was very painful. In a patient suffering from phthisis with constant hemoptysis due to little aneurysms of the kind described by Rosmussen, M. Huchard employed the same treatment and succeeded in stopping the hemoptysis. This, however, did not prevent the patient from dying later from pulmonary tuberculosis. Certain precautions have to be preserved in this method of treatment, for a patient, under the care of Boisset, in whom injections had been made on a very small scale lest the blood should coagulate all at once, died very suddenly from embolism. The injections must never be made in the neighborhood of the aneurysmal sac, and still less into the aneurysmal sac itself.

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SATURDAY, DECEMBER 3, 1898.

THE ETIOLOGY AND CLASSIFICATION OF PERITONITIS.

In the *Philadelphia Medical Journal* of Nov. 12, 1898, Dr. FLEXNER of Baltimore presents certain facts obtained by the postmortem study of a large number of cases of peritonitis in which careful bacteriologic examinations were made.

Among the earlier studies of the experimental peritonitis, that of GRAWITZ in particular, as well as of others, has clearly defined the conditions that result in the development of peritonitis in animals. GRAWITZ has also shown that these results are nearly allied to the natural conditions found in man. He divided peritonitis into primary and secondary forms; the first accords with the so-called idiopathic or rheumatic peritonitis. In accordance with modern ideas GRAWITZ regards all forms of peritonitis as caused by micro-organisms. Among the favoring conditions he mentions wounds communicating with the abdominal cavity and the accumulation of fluids in such quantities that it can not be absorbed in the natural manner. Pathogenic organisms may be introduced directly, or may be brought by the blood or lymphatic current. Secondary peritonitis is more common, occurring under a number of conditions, bacteria being introduced by contiguity. This group includes the peritonitis of puerperal infection, of intestinal gangrene, and perforation.

FLEXNER finds that many of the cases which GRAWITZ regarded as a primary peritonitis were in reality secondary, indeed only those cases in which chronic renal, cardiac, or hepatic disease pre-existed are convincing examples of the primary form.

TAVEL and LANZ, in their exhaustive study of peritonitis from a bacteriologic standpoint, attempted to answer the question whether peritonitis is or is not a multiple infection, and they conclude that the hematogenous forms are mono-infections, while those forms that proceed directly from the diseased organs are generally poly-infections.

The statistics upon which Dr. FLEXNER'S report is based include 106 cases of peritonitis. The bacteriologic examination included was made by means of plate cultures. Several classes can be distinguished. Thus, one might divide them into primary and secondary forms. By secondary peritonitis FLEXNER would understand those following operations upon the peritoneum or the organs which it contains, and those in which the infection of the peritoneum takes place from diseased viscera within it. It is preferable to call all infections of the peritoneum in which the micro-organisms are brought by the blood or lymph current, without the intervention of some diseased organ or part, as primary. The organisms may reach the peritoneum by the blood or lymph current; although it is conceivable that they could pass through the intact intestine, yet convincing proof of this possibility has not yet been furnished.

Of the 106 cases, twelve presented the characteristics of a primary peritonitis; in all of these there were previous chronic diseases. In nine instances there was a single infection, in one instance a multiple infection. The most common organism was the streptococcus.

The secondary forms are far more frequent than the primary, and of these at least two classes can be distinguished, dependent upon the mode of infection. The first class may be designated as exogenous peritonitis; here the microbes enter from without. The condition is really one of wound infection. Of the 106 cases, thirty-four belong to this group. Twenty-five were single, nine multiple, infections, and the bacteria concerned were chiefly the pus microbes, showing a striking similarity with the conditions of ordinary surgical infections, the only difference being that the bacillus coli commune was present in a few cases, being alone in two, combined in five.

The second class of secondary peritonitis FLEXNER terms endogenous; in these the bacteria come partly or wholly from the intestinal tract, and they are therefore chiefly multiple infections. This is the common form of infection; it is represented in this series by sixty cases, in only two of which the bacteriologic examination gave negative results. The single infections were relatively more infrequent in this form, and the micro-organisms found differed widely from those in the exogenous variety. The bacillus coli commune assumes a much more important rôle and the streptococcus is much oftener present. FLEXNER believes that one must concede to the colon bacillus the possibility of producing suppuration.

While the examples of primary or idiopathic peritonitis in this series were really instances of terminal infections in connection with chronic diseases, it is also found that in the twenty-five cases of the exogenous peritonitis twenty-six presented pre-existing more or less chronic diseases of familiar varieties. It therefore becomes necessary to recognize that infection of the normal peritoneum may depend not only upon local but also upon general predisposing causes.

FLEXNER does not see his way clear to definitely establish a group of so-called aseptic or chemic peritonitis, as advocated by BUMM, TAVEL and LANZ, and yet he would not deny its occurrence.

From this extensive material it becomes certain that the primary or idiopathic forms of peritonitis are limited to a rather small number of instances that belong to terminal infections; that a second variety of peritonitis conducts itself very much like surgical infections, and that conditions that predispose to infections in general are in operation here also; a third variety is dependent upon disease in an intraperitoneal organ, which brings pathogenic organisms as well as other substances directly or indirectly into the abdominal cavity which becomes infected from within.

THE MODE OF SPREADING OF BUBONIC PEST.

P. L. SIMOND [1] summarizes a careful research concerning the mode of spreading of bubonic pest in the following important conclusions: The study shows that the pest is spread by two principal factors—the rat and man. Man is the ordinary agent of transport for long distances, which could not be attained by the rat; the rat is the carrier from house to house. It is much more important in this respect than man, and plays the essential rôle in the dissemination of the disease in local epidemics.

When pestiferous rats enter a new district there is usually some delay before the disease appears in epidemic form; the arrival of infected human patients into a new territory is not always followed by epidemics of pest. In order that epidemics may be established there must be a circle of favorable circumstances, among which the preliminary transmission of the virus to rats seems to be the most important. The period of incubation represents the time necessary for the development of the disease among rats.

The gravity of a human epidemic stands in close relation with that of the epidemic among rats. The progress of the disease throughout the city follows the route adopted by the migrating rat. Even when the disease is no longer associated with a great mortality among the rats, it may continue to exist in a benign form, and the so-called sporadic human cases, which manifest themselves after the subsidence of an epidemic, may be attributed to this benign form in the rodent.

[1] Annales de l'Institut Pasteur, xii, 1898.

A second epidemic of the disease usually manifests itself about twelve months after the appearance of the first, from which it is separated by a longer or shorter period of calm. The reason of this periodicity in the epidemics is not determined. It is undoubtedly connected with the re-establishment of the disease in epidemic form among the rats, and depends in part upon the repopulation of the city involved by these animals. Careful experiments have shown that their is but little danger in the spread of the disease from infected organs or food.

In a certain proportion of cases the point of entry of the microbe is marked by local reaction, which is generally situated in a region where the skin is thin and delicate. When this local reaction, as well as the swelling of the regional lymphatic glands, fails to appear, then it is to be attributed to the great virulence of the micro-organism, and not to a different mode of entrance.

The notion that the transmission of the disease depends upon larger parasites is in accordance with the observations made on rats; a few hours after a rat dies from the disease the fleas abandon the cadaver in order to attach themselves to other animals and to human beings. The points here referred to are strengthened: 1. By the presence of the specific micro-organism in the contents of the intestines of the fleas which have absorbed infected blood. 2. By certain facts in connection with the transmission of the disease from the rat to man and from man to rat. In the last instance it is possible also, that other parasites of the same class as the flea may act as carriers. 3. By the possibility of the transmission of the pest to a healthy rat by cohabitation with a rat covered with pestiferous fleas, whereas cohabitation with a rat sick of the disease but deprived of fleas is constantly harmless.

Finally, it may be stated that the mode of spreading of bubonic pest comprises the transport of the micro-organism by the rat and by man; its transmission from rat to rat, from man to man, from man to rat, and from rat to man by parasites. The prophylactic measures should be directed methodically against each of these three factors; the parasites, man and the rat.

EPILEPSY AND INSANITY.

In the *Philadelphia Medical Journal* of November 19, Dr. J. H. MCBRIDE, the well-known alienist, criticises a statement made in an earlier issue by Dr. FREDERICK PETERSON, that less than 10 per cent. of ordinary epileptics become insane. He holds that a large proportion of the chronic epileptics suffer from a more or less marked condition of dementia, and still more frequently from temporary mental perversions, often dangerous, and there is further a special mental condition characteristic of those afflicted with this disorder or symptoms that might, it would seem, be

reckoned as insanity, since, as he says, it puts the great majority of them so far out of relation to their environment as to render them incapable of self support. He believes "that, with rare exceptions, habitual epileptics suffer sooner or later from some degree of mental impairment," not always amounting to insanity, but sufficient to incapacitate them for independent self-support, and that a prognosis of mental failure is always justifiable if the fits are not arrested within two or three years. The fits are only indications of a morbid condition that involves the patient's whole mentality and mixes with all he does and is.

These facts are important, if true, and the difference of opinion, or perhaps one should rather say of point of view, of these two eminent specialists renders them the more worthy of consideration. Dr. PETERSON has apparently much the same opinion as his critic as to the disadvantages of the epileptic in the struggle for existence, but he looks upon epilepsy more as a disorder, that, like deafness or blindness or any other disabling defect, often incapacitates its possessor for employment in ordinary occupations without necessarily putting him in the category of the actual insane. A certain degree of mental impairment may even be admitted as a common result of the attacks without rendering it necessary to consider the patient insane, and he probably would admit as much—the difference of the contesting views is therefore somewhat diminished. There is no doubt that habitual epilepsy is dangerous to mental integrity, understanding by the word "habitual" a marked frequency of the attacks, with their very commonly associated temporary mental obscuration or dullness, which of itself in any single fit may be no more marked than that connected with a migraine attack or even an ordinary headache.

This limitation of the meaning of the term, "habitual," however, somewhat alters the case; there is a large proportion of epileptics who would hardly fall under Dr. MCBRIDE's definition or conception apparently of the term. There is, first, a considerable number who can hardly be excused from the epileptiform category, in whom only one or two fits may occur in a lifetime—their cerebral instability is so slight that it is only under conditions of special stress that the explosive manifestations can occur. These are perhaps more numerous than is commonly supposed. There is also a second class, in whom the epileptiform manifestations have been confined to special periods of their lives, and while well-marked and frequent at such period, have entirely ceased under proper treatment and removal of the cause. These cases are not numerous, but they exist and have to be considered. One such case was known to the writer, that after having had a number of attacks at one time in his life, afterward rose through his own merits and endeavors to a very high position, one such as few are able to achieve or satisfactorily fill. Such instances are exceptional, it is true, but how far they may be *in posse* amongst such temporary epileptics no one can say. There is still a third small class of epileptics in whom the fits may be called habitual, though they are not usually very frequent, whose mental failure does not show itself, at least until later in life, and sometimes is never very apparent. While as a class they are seriously handicapped by their affliction, some of them succeed in holding their own in life's competition, and these are they to whom Dr. MCBRIDE probably alludes as exceptions so rare as to be hardly worth considering in a discussion of epilepsy. The first two classes are hardly recognized as epileptics at all except by those who know their whole history, and naturally such are few in number.

Taking all these three classes together they must form a considerable percentage of the total number of epileptics. The first two there is reason to believe are more common than is generally realized; they fall for the most part into that great majority which Dr. MCBRIDE assumes are probably never seen by specialists. While Dr. PETERSON'S estimate of the number that go insane may be too small, it seems equally probable that any very extensive generalizations in the opposite direction are equally liable to be in error.

A word may be said here as to the special mental character credited to epileptics. It is natural to suppose that any such morbid cortical irritability as can produce the phenomena of epilepsy might easily affect the disposition, but it is not a universal fact that all epileptics are abnormal in this respect. Some few of them indeed are very far from it, and the characteristic epileptic character may exist where no genuine symptoms of epilepsy can be discovered. It is hardly a positive criterion of the disease, though in some form or other common enough to be noticeable in perhaps a great majority of pronounced chronic cases.

In conclusion it may be said that it requires a rather broader conception of insanity than is commonly admitted to apply it to epileptics generally, or even to all the chronic cases in their later developments. They are unfortunates, to some extent mentally impaired in a large proportion of cases, but it is as easy to overestimate the frequency of such defect as to underestimate it. In criminal cases this possibility would be very liable to be brought forward, whether rightly or not is not always easy to say, while apart from this contingency their sanity might never be in question.

THE ENGLISH AND AMERICAN ARMIES IN THEIR RECENT CAMPAIGNS.

Without any desire on our part to belittle the sufferings of the United States troops in the recent Spanish War, in the sense that we are desirous of withholding from them the credit for bravery which they deserve, we have felt all along, and have expressed in these pages our belief that much of the

suffering was one of the necessities of the war rather than that due to carelessness or criminal negligence of those who are in authority. This country had been so long blessed with peace, and its people had been for so long unacquainted with the conditions which necessarily arise before, during or after battle, that they had not provided sufficient means for meeting emergencies, and did not at first grasp the impossibility of carrying on an active campaign without the surgical failures which, however much they may be deplored, were to a great extent unavoidable.

Some of our English friends have undertaken to suggest to us that it would be well for American officers to take lessons from their English cousins as to the management of medical and food supplies for an army in the field, and have intimated that much of the suffering of our troops could have been avoided, had our officers been properly equipped in medical details.

Those who have studied the almost simultaneous campaigns of the American troops in Cuba with the British troops in the recent Soudan expedition can not fail to have noticed, notwithstanding the boasted efficiency of the medical arm of the British service, here again the necessities of war resulted in an amount of suffering far in excess of that which was produced by actual wounds. The amount of illness and death which ensued from disease rather than from surgical affections during this British expedition has been large, practically as large as that which has been experienced by our own army, and commanding officers have been unable to provide the wounded with the comforts which humanity would deem desirable. They have seemed to recognize that the object of the war is the speedy conquering of the enemy, and while not ignoring those who have fallen, have continually kept the main object of the expedition in view.

To those who are wont to attack the army administration at Montauk Point or elsewhere, an account which is given by a correspondent in the *British Medical Journal* of November 12, of the recent Soudan expedition, and entitled the "Seamy Side of War," is of interest. In this letter it is shown that in the first advance after the battle of Atbara last spring, indignant protests were made against the insufficient provisions made for the sick and wounded, and not until these protests were made again and again were they heeded in part, and then so late that the relief did not reach the front in time to be of service. Again, we are told that the wounded after this battle were carried so clumsily by native soldiers over rough ground that they frequently slipped and fell, causing torture to the sufferers, and that when English volunteers offered to carry the wounded their services were refused. Again, in the second advance on Omdurman, even greater hardships were suffered. A sudden order to advance, accompanied by one which insisted that hospital tents should be struck and packed within five minutes, left the surgeons with no place for their sick. Fortunately they found a barge stacked with ammunition, and on this 145 wounded men were hastily carried, with no medical supplies, no food except a few cans of beef extract, and no means of heating this. These wounded men were stumbled over by the Egyptian troops rushing for ammunition in frantic haste, and very shortly additional wounded men had to be squeezed on board until they were "packed like sardines," and the digging of graves being abandoned for lack of time, the dead had to be placed along with the living on the barge to prevent their mutilation, and there they remained, in the words of the correspondent, "emitting effluvia until the following day, when they were buried." Further than this, this barge was left without any military protection, and at any moment every one on board might have been massacred by the enemy. There were only three surgeons to attend to 145 wounded, and operations were done in the sun on piles of ammunition boxes, where the thermometer registered 119 degrees in the shade. We are also told that the Egyptian brigades fared worse than the wounded we have already mentioned.

Either because the English are accustomed to the suffering of their troops and recognize the seriousness of war, or because they are indifferent, which is not likely, their newspapers have not raised the so-called howl of indignation which has characterized the pages of many American newspapers.

THE ARMY MEDICAL DEPARTMENT OF THE FUTURE.

The echoes of our alleged maladministration in military management, and particularly in medico-military matters, come to us from afar off. The *Lahore Civil and Military Gazette* of Oct. 6, 1898, gives credit to the Indian medical service for being one of the few departments which escaped scathing criticism during the campaign in Tirah, on the North-west frontier. It has been generally admitted that the arrangements for the care of the sick and wounded in that campaign were, as a rule, "most complete and efficient," and that nothing was neglected that could relieve suffering or assist recovery, credit for this being given to the Indian Government, which spared no expense, and to the medical officers themselves for the excellence of their organization and their devotion to duty. The only unfavorable criticisms which appeared were some strictures in the English papers because the stretchers were not provided with awnings nor the field hospitals with the Roentgen-ray apparatus.

After inviting us to look on this picture, the *Gazette* presents us with another of the conditions in Cuba during and after the attack on Santiago. The contrast would have been sufficiently marked even if the second picture had been drawn from official state-

ments instead of from the exaggerations and false reports which appeared as news in the extras of our great dailies during the progress of the war. But the *Lahore Gazette* kindly recognizes the difficulties under which this country labored in expanding an establishment which was practically nothing more than a Federal police force into a military organization for immediate war purposes. It recognizes also from some Indian experiences, what we have learned during the past few months: that the lavish expenditure of money after the occasion has arisen is of little value when compared with the possession of an organization which has been prepared with care for just such an emergency.

This country should have an army competent to cope with the possibilities of the future. The Chairman of the Military Committee of the House of Representatives has been cited as suggesting 100,000 men as the strength of the army required. It is useless to say that we can trust to the manhood of the American people when the occasion requires a resort to arms because we have seen how much unnecessary suffering is ordinarily involved in a sudden muster for war service. With an increase of the Army should be associated an increase in the strength of its medical department, for the argument drawn from experience against a hastily organized fighting force applies with equal strength to a hastily organized medical department for the care of that force.

The medical department of the Army at the present time consists of 192 officers. This number did not suffice for the needs of our Army of less than 40,000 men, scattered as it was at many small posts before the outbreak of the recent war. When war was declared, authority was given to raise the strength of the regular regiments, and there is now or soon will be a strength of about 60,000 men. To meet this increase, the SURGEON-GENERAL, at the close of his annual report, recommended the addition of 88 medical officers to the present force, but he added that this recommendation was based upon present needs, and was irrespective of any increase that might be rendered necessary by legislative action during the coming session of Congress.

The white troops of the British Army, 200,000 strong, have a medical force of about 800 officers, but the contingent on duty in India has often to be assisted by officers of the Indian Medical Service, the corps specially organized for duty in native hospitals and with native regiments. The Army of Spain has a medical force of 900 officers to a strength of 100,000 men, this large force being required, probably, by the prevalence of disease among the troops in the Island of Cuba. Russia has about 400 medical officers of all grades for every 100,000 of its army of nearly 900,000 troops. We may consider therefore that a medical force of at least 450 will be necessary for an army such as that suggested by the Chairman of the House Military Committee, and this appears to have been the view taken by SURGEON-GENERAL STERNBERG in recommending an addition of 88 officers to his present force of 192 for the needs of the present strength of 60,000 men; 280 for 60,000 is in the proportion of 466 for 100,000.

In forming a corps of 450 medical officers having the same proportion of the various grades as the smaller corps now in the service, there should be one major-general, the surgeon-general; 1 brigadier-general, as assistant surgeon-general; 14 colonels, as deputy surgeons-general; 24 lieutenant-colonels, as chief surgeons; 120 surgeons, majors, and 250 assistant-surgeons, captains and lieutenants. The Chief of the Corps, in view of his responsibilities, which are appreciated by the general public only in trying times like those of the recent war, should have the rank of major-general. The criticism has often been made that the best men will not enter the military service because the prizes are so few, the highest rank attainable being that of brigadier-general, and this reached only by the one man appointed as surgeon-general.

It is hardly to be supposed that any difficulty would be experienced in filling up this enlarged corps with medical men having the proper qualifications. With a larger army, a larger number of positions of relatively high rank as the reward for continued service, and a broader stage of existence opening up in the future, as compared with the dull life of the past at small Western posts, competition for position would no doubt be much greater than heretofore. Besides, the taste of military life obtained during the past months by volunteer medical officers would also have its influence in filling up the medical positions of an enlarged army. After the Civil War, little effort was made by volunteer surgeons to enter the regular army. Many of them had, no doubt, got enough of war service during the long-continued struggle, but the main cause was the want of vacancies. Retrenchment and reduction of the military establishment followed the Civil War, instead of the expansion which seems needful to meet the present requirements of the country.

An enlargement of the powers of the medical department is of as great importance to its efficiency as the number and grade of its personnel. The Spanish War demonstrated the inability of medical officers, however willing and energetic, to accomplish their object when dependent on others for essentials. If medical officers are to be held responsible for the sick and wounded, they should be given powers commensurate with their responsibility. Any bill for the enlargement and improvement of the medical corps should provide for its independence of the quartermaster's department. It should have command of its ambulances, hospital tents, wagons and of all the equipment necessary for the transportation and care of the sick and wounded of the army.

We feel sure from the energy displayed at Santiago in trying to overcome the difficulties caused by inefficient quartermaster's management, that were medical officers their own quartermasters the *material* of the field hospitals would always be on hand where it was required unless interdicted for imperative military reasons by the commanding general.

CORRESPONDENCE.

The Jugglery of Statistics.

WASHINGTON, D.C., Nov. 21, 1898.

To the Editor:—I had hoped that after Deputy Surgeon-General Smart's reply to an absurd editorial on the "Jugglery of Statistics," which appeared in the JOURNAL of October 29, no one would seriously quote the mortality rates of the Civil and Spanish Wars, adduced by the *Philadelphia Medical Journal* of October 15, and yet the writer of the editorial on the "Caribbean Climate in its Medico-Hygienic Relations" (JOURNAL, p. 1249) committed this error.

I cannot refrain, therefore, from referring the writer of the editorial to the article above referred to, and if still unconvinced he may profit by Dr. Smart's letter on the "Vital Statistics of the War," which appeared in the JOURNAL of November 19. Respectfully yours,

GEORGE M. KOBER, M.D.

The Commission Evil.

ST. PAUL, MINN., Nov. 28, 1898.

To the Editor:—In your issue dated November 26 Dr. Robert T. Morris writes to inquire whether your editorial condemning the purchase and sale of cases is founded upon a knowledge of specific instances of this sort.

I can not answer for the JOURNAL, but can assure Dr. Morris that I know of at least a half dozen surgeons and physicians of excellent standing in the profession who in a subterranean way carry on this traffic.

As an internalist I can not say that I have ever felt such competition, nor indeed do I know of any stricely medical man who pays commissions, but I have personal knowledge of a score of surgical cases in which fees have been paid or demanded.

It has given me great pleasure to know that my protest against this indefensible practice, contained in a letter to the *N. Y. Medical Journal* of October 29, has resulted in bringing this matter into a prominence which must end in its complete annihilation. Yours very truly,

CHAS. LYMAN GREENE, M.D.

A Pair of Large Twins.

FORT COLLINS, COLO., Nov. 22, 1898.

To the Editor:—On Nov. 7, 1898, I was called to attend Mrs. C. in confinement. Found the abdomen enormously distended, and from the size and irregular shape I diagnosed probable multiple pregnancy. In five hours I delivered her of a girl baby weighing ten and three-quarter pounds, and four hours later of a boy weighing ten pounds. Both children are strong and healthy. The girl was delivered without assistance, but the boy had to be delivered with forceps. Both were the left occipito-anterior presentation. There was but slight laceration, and aside from some rise in the temperature of the mother, during the first week, everything proceeded normally. The placentæ were separate and small. There is no history of twins in the family so far as I can learn. The patient is 20 years of age, married one year and a primapara. Fraternally,

Respectfully yours,

W. A. KICKLAND, M.D.

BOOK NOTICES.

A Manual of the Practice of Medicine. By FREDERICK TAYLOR, M.D., F.R.C.P. Fifth edition. Pp. 1002. London: J. & A. Churchill, 1898; from P. Blakiston's Sons and Co. Philadelphia. Price $4.00.

This well-known work is a short yet complete work on the practice of medicine and in the preparation of this fifth edition it has been very carefully revised and some sections rewritten, and notice of many diseases recently recognized or omitted from former editions have been added. Among the former are the introduction of diseases of the nervous system, diseases of the blood and the subject of aphasia and ringworm. In the latter are glandular fever, diver's paralysis, erythromelalgia, angeioneurotic edema, hypertrophic pulmonary osteo arthropathy, and tubercle of the skin. A special section is devoted to diseases of the mediastinum, and filarial diseases and hemo-globinuria have been transferred to diseases of the lymphatic system and of the blood respectively.

As only a little over eight years have elapsed since the first edition of this work was issued, the fact that five editions have been called for in the eight years attributes to the value and popularity of the work, beyond the powers to review or to increase or diminish the elements of its popularity, as will be seen by a perusal of the work. Its comprehensiveness consists in the fact that no essential detail is omitted, and no superfluous words or phrases included, all excellent characteristics, as our readers will undoubtedly agree.

Traumatic Separation of the Epiphysis. By JOHN POLAND, F.R.C.S. 337 illustrations and skiagrams. Pp. 926. London: Smith, Elder & Co., 1898; New York, G. P. Putman's Sons; Chicago, A. C. McClurg & Co. Price $18.

The literature of this subject is quite extensive, although widely scattered, and the author has brought together and summarized the records heretofore published. The following is the table of contents: Chapter 1, Historic; 2, Anatomy; 3, Etiology; 4, Frequency of the Various Separations; 5, Experiments in Pathologic Anatomy, and their Histologic Anatomy; 6, Pathologic Anatomy; 7, Symptoms; 8, Prognosis and Results; 9, Treatment. The remainder of the work is devoted to separation of the epiphyses of the upper extremity, separation of the epiphyses of the clavicle, separation of the epiphyses of the scapula, separation of the upper epiphysis of the humerus, separation of the lower end of the humerus before puberty, separation of the lower epiphysis of the humerus in youth, separation of the internal epicondyle of the humerus, separation of the external epicondyle, etc., separation of the upper epiphysis of the radius, thumb, metacarpal bones, phalanges; then follow articles on the separation of the epiphyses of the lower extremities, the pelvic bones, the femur, bones of the leg and of the foot. The work concludes with articles on separation of the epiphyses of the vertebræ and ribs, and an appendix.

There are 299 illustrations in the text, besides a vast number of skiagrams, showing the development of the bones.

Few books have appeared in recent times of more value to the advanced surgeon than this, and the superb dress in which the publishers have presented it makes it a pleasure to peruse. We can not too strongly commend this work, and congratulate the profession on the valuable addition to surgical literature which is here presented.

Clinical Lectures on Mental Diseases. By THOMAS S. CLOUSTON, M.D., Lecturer on Mental Diseases in the University of Edburgh. New (5th) edition. Crown 8vo, 750 pages, with 19 full-page colored plates. Philadelphia and New York: Lea Brothers & Co. Cloth, $4.25, net.

As the study of mental diseases has become compulsory on all medical students, good text-books, arranged in a manner which leads to an easy understanding of the subject, are abso-

lutely necessary. These qualifications are possessed by Clouston's work, which is suitable alike for the general physician and the specialist. The advances that have been made in psychiatry in the two years that have elapsed since the presentation of the last edition have been incorporated. There is one thing that always gives a charm to Clouston's works, i. e., his honesty, modesty, and entire candor. It is evident from a perusal of the pages of this edition that Clouston will continue to remain a constant favorite.

A Pocket Medical Dictionary giving the Pronunciation and Definition of the Principal Words used in Medicine and the Collateral Sciences, including very complete tables of the arteries, muscles, nerves bacteria, bacilli and micrococci, spirilli and thermometric scales and a dose list of drugs and their preparation, in both the English and metric system of weights and measures. By GEORGE M. GOULD, A.M., M.D. A new edition, entirely rewritten and enlarged, including over 21,000 words. Pp. 530, exclusive of dose table. Philadelphia: P. Blakiston's Sons and Co., 1898. Price, $1.

The confidence of the public in Dr. Gould as a dictionary-maker is such that they are largely ordered in advance, and different editions follow one another with such rapidity that it is difficult to keep track of them. The present dictionary will be found extremely useful.

A Quarterly of Clinical Lectures, Etc. Edited by JUDSON DE LAND, M.D.; J. MITCHELL BRUCE, M.D.; DAVID W. FINLAY, M.D. Volume III, Eighth series, 1898. Philadelphia: J. B. Lippincott Company, 1898.

This volume brings the clinic to the library of the practitioner, and many of the clinics are so literal that without a very great stretch of imagination one can almost see the patient being described by the clinician. The practitioner who wishes to keep in touch with the latest advances in the practice of medicine, surgery and the specialties can do so no easier than by keeping up with the clinics as set forth in this admirable series.

Hartley-Auvard System of Obstetrics. Revised by JOHN D. HARTLEY. Third (1898) edition, 436 pages, 543 illustrations. New York: Flint & Co., 104 Fulton St. Cloth $4, leather or half morocco $5.

In this work the author plunges in *medias res* without pre face or introduction, and as far as possible diagrams are introduced to illustrate the author's views. In the whole art of obstetrics he has brought it as near as possible to the mechanical basis. The teachings are correct, and all unnecessary and extended discussions are omitted. Practitioners and students will find this work of great value.

A Text-Book of Pathology. By ALFRED STENGEL, M.D. 372 Illustrations. Pp. 848. Philadelphia: W. B. Saunders, 1898; W. T. Keener, 52 Randolph Street, Chicago Agent. Price, cloth, $4; half morocco, $5 net.

In this book the author has presented the subject of pathology from the point of view of the clinical pathologist. Prominence is given to pathologic physiology; controversial matters and discussion of methods have been omitted as far as possible. The work is divided into two parts, of which the first is on General Pathology, the chapters of which are as follows: 1. Etiology of Disease. 2. Disorders of Nutrition and Metabolism. 3. Disturbance of the Circulation of the Blood. 4. Retrogressive Process. 5. Inflammation and Regeneration. 6. Progressive Tissue Changes. 7. Bacteria and Diseases due to Bacteria. 8. Animal Parasites and Diseases Caused by Them. Part 2, Special Pathology, is arranged as follows: Chapter 1. Diseases of the Blood. 2. Diseases of the Lymphatic Tissues. 3. Diseases of the Circulatory System. 4. Diseases of the Respiratory System. 5. Diseases of the Gastro-intestinal Tract. 6. Diseases of the Ductless Glands. 7. Diseases of the Urinary Organs. 8. Diseases of the Reproductive Organs. 9. Diseases of the Bones. 10. Diseases of the Joints. 11. Diseases of the Voluntary Muscles. 12. Diseases of the Brain and its Membranes. 13. Diseases of the Spinal Cord and its Membranes. 14. Diseases of the Peripheral Nervous System.

While not as exhaustive as many works on the subject, it may be said that it fairly covers the ground, and so far as the ground is covered the work is well done and has been brought quite down to date.

We are glad to see that weights and measures used in the book are according to the decimal system.

The illustrations are excellent, and students as well as practitioners will find the work of great value.

NECROLOGY.

D. A. MCTAVISH, M.D., died at West Bay City, Mich., November 17. The Doctor was born in Glencoe, Ont., in 1855, was graduated from Toronto University in 1881, was a licentiate of the Royal College of Physicians and Surgeons of Edinburgh, Scotland, and a member of the Michigan State Medical Society.

CHARLES MASSEY HAMMETT, M.D., formerly health officer and coroner of the District of Columbia, died in Washington, November 22, of chronic interstitial nephritis, aged 63 years.

JAMES S. KELLY, M.D., Archbald, Pa., November 16, aged 27 years.——William R. Straw, M.D., Vinita, Ind. Terr., drowned November 21.——A. E. Sullard, M.D., Franklin, N. Y., November 19, aged 79 years.——Herman Voeller, M.D., Sacramento, Cal., November 14, aged 65 years.——J. T. Webster, M.D., Emporia, Kan., November 12, aged 44 years.——A. E. Willard, M.D., Friendship, N. Y., November 20, aged 67 years.

PUBLIC HEALTH.

Etiology of Dysentery.—A careful study of an epidemic of dysentery affecting 1121 persons in a town of 24,300 inhabitants, has resulted in the conclusions that the meteoric influences, the drinking water, contagion and food, can only be considered as predisposing or secondary causes. Also that the distinct groupings in the quarters where the ground water is the closest to the surface, indicate the predominant rôle to be attributed to the water and the subsoil in the etiology of the affection. There the disease had birth, and thence it was propagated. The writer concludes, therefore, that besides the hydric origin of dysentery and of typhoid fever, we must also ascribe it in certain cases to telluric action.—*Bulletin de l' Acad. de Méd.*, October 31.

Prevention of Insanity Among Adolescents.—A superintendent of a large hospital for the insane, near New York City, states in his annual report that "societies for the prevention of cruelty to children would do well to branch out into the work of prevention of insanity in childhood by insisting on more outdoor physical exercise, and less intellectual over-work, until the body has been developed to a sturdy, healthy frame, checking the emotions and grading study according to the age and physical condition of the child. Physical deterioration, if not actual pathologic conditions, exist in seven-tenths of our cases and act as exciting causes for mental disturbance." He has observed, what is plainly evident, that a larger proportion than formerly of the patients admitted to insane hospitals have the insanity supervening upon a very imperfect constitution, which has been either inherited or, more frequently, acquired through an unwise early management leading to physical deterioration. —*Charities Review*, November.

Laboratory Contagion.—The quarantine physician at Suez comments on the dangers of infection from experimental laboratories, regretting that they are not invariably isolated with as much care as a contagious-diseases ward in a hospital. "I know," he continues, "of a laboratory devoted to the study

of epidemic diseases, which is located on the ground floor of a government building. The corridor leading to it is the single corridor for the use of all the employes and their families, who live in the upper stories. The space containing the cages of the animals involved in the experiments, is only separated from the common yard where the children play by a lattice-work. The least negligence may lead to the most serious consequences." Landouzy observes: "The most insignificant case of animal plague, escaping from a defectively guarded laboratory, threatens to become, more or less readily and rapidly, the occasion of an epidemic that may break out so far from its starting-point as to be practically untraceable."—*Presse Méd.*, November 5.

Unsanitary Management of Cemeteries.—It seems that those who die in Cuba are destined to secure the peace and quiet of sepulture only so long as they have paid for the niche in which they are destined to be deposited. "Rest in peace" depends upon the affection and willingness of the dead person's friends to pay another's rent in advance. When the year expires, unless the yearly rental is forthcoming, the coffin is unceremoniously taken out and dumped on a convenient field without the sacred *compo*. The walls of these niches become masses of germ-laden masonry, alternately warmed by the tropic sunshine and kept moist by tropic dews. In other words, they are most favorable culture-beds, and containing, as they do, the foul germs of yellow fever, become, when disturbed, sources of wide-spread infection. The disinterring of the dead is not allowed in Jamaica. Four years ago in one of the West India Islands belonging to Great Britian, part of an old cemetery was dug up which contained the graves of many yellow fever victims. Yellow fever had been absent from the island for years, but immediately after this it appeared and made many victims.—*Red Cross Notes.*

Transmission of Contagious Diseases by Insects.—P. R. Joly (*Thèse de Bordeaux*), in a monograph on this subject, quotes instances of malignant pustule, Egyptian ophthalmia and Delhi boil conveyed by flies. He has also found that the legs of flies may be covered by staphylococci and many other forms of bacteria. Tubercle is particularly liable to be disseminated by flies. They come in contact with sputa and other media, whereby the tubercle bacilli discharged from the body of the patient becomes ingested, and then alight on food and deposit the tubercle bacilli, and thus easily contaminate milk, meat and other substances. The author quotes Yersin as having noticed that the bodies of dead flies collected in his laboratory often contained numbers of the plague bacillus. The influence of various insects, more particularly the mosquitoes, in carrying the filaria sanguinis is well known. The mosquito has also been suspected as the agent in the conveyance of malaria.—*Medical Review of Reviews*, October.

Tuberculosis and Food.—At the recent meeting of the French Association for the Advancement of Science the section of hygiene, at the suggestion of Professor Nicholas, passed a resolution pointing out that the convection of tuberculosis by inhalation is only one of the modes of infection, and that a larger part of the diffusion of the disease is played by contagion through the alimentary canal, as proved experimentally and clinically, urging the necessity of taking adequate measures to insure the sterilization and harmlessness of articles of food. In this resolution the opinion was expressed that it is desirable in addition to take measures to suppress, or at least diminish the causes of weakning of the constitution, which make it fall an easy prey to the disease—overstrain, confined air, overcrowding and unhealthiness of dwellings. In every dwelling a sufficient cubic space should be allowed in proportion to the number of the inmates, and all apartments must be freely ventilated and exposed to the sunlight; it is also necessary that low-built houses should be furnished with large courts to insure perfect aëration. In this respect the English cottage system represents the ideal which should be aimed at. The section further urged that the widest possible publicity should be given to the modern doctrines as to the contagious nature of tuberculosis and its prophylaxis; this should be done by means of public lectures, and also by the moral influence which medical men can exercise in their own sphere. The curability of the disease should also be insisted upon.—*Nature.*

Chronic Enterocolitis.—It is important, says Dr. McKee in the *Philadelphia Polyclinic*, to recognize the fact that most cases of this disease in infancy and childhood originate in chronic milk infection. Not infrequently another infection may run coincidently with the infection, and possibly adds its depressing influence. In some cases, the malarial organism has been demonstrated. When the etiology is clear, the treatment becomes quite plain: 1. Withdraw milk from the diet, and do not return to it until the case is well on the road to convalescence; then resume milk cautiously. 2. The affection must be treated locally, and best by enteroclysis. Silver nitrate (1 to 2000 or 4000) is used twice or thrice daily until the stools begin to lose their vile odor (salt solution is used to neutralize each injection of silver). In the last convalescent stage, tannic acid injections, as recommended by Dr. E. Holt, are invaluable. Dr. Wiley of the Children's Clinic has had excellent results with the latter injections, and Dr. McKee can heartily indorse the treatment. 3. Intestinal antiseptics are of signal use, as they are in all cases of milk infection; salol and benzo-naphthol have given best results in the Children's Clinic. 4. Astringents by the mouth are best withheld, for the kidneys are likely to suffer in any case. 5. Ingenuity may be well-nigh exhausted in feeding the youngster, for we have a chronic process with which to deal and nutrition must be maintained. 6. Hygienic details will demand attention for several months, and tonics must be employed over a corresponding period of time.

Morbific Influences of Burial Grounds.—The dwelling places of the dead have, from time immemorial, been the source of dread to civic aggregations, but chiefly within our own memory have they been the occasion of preventive legislation, on the score of their being prejudicial to public health. Until the discovery of pathogenic bacteria, this was not attributed to exhalations from the decomposing bodies of those interred, and to the pollution of the ground-water, which subsequently found its way into wells from which it was drawn for potable purposes. Since the discovery and identification of disease-producing micro-organisms, the tendency of sanitarians has been to regard these as the infecting element. While there have been numerous instances in which cemeteries have apparently been responsible for the spread of disease, still there have always been those who have claimed that the proof has been insufficient, and that other causes have been instrumental in producing the results attributed to the cemeteries. The Imperial Board of Health of Germany has instituted an investigation in this important matter, the result of which is exceedingly reassuring to those who are compelled to live in the neighborhood of places of interment. In the experiments conducted under the Board's direction, dead hogs and dogs, in which had been placed tuberculous material, anthrax and typhoid germs, were buried in boxes in the ground and at various intervals of time thereafter both the ground-water and the soil were examined to determine the presence or absence of living germs. Ninety-six days was the longest time that the typhoid bacillus was found alive, while the cholera spirillum lived but twenty-eight; the tubercle bacillus less than 125, and the bacillus of tetanus less than 361 days. Anthrax was the most persistent, being found capable of communicating infection after one year. It must be borne in mind that these results wers obtained by examination of the material inside the boxes, or in immediate proximity thereto. With the exception of the anthrax there were no germs found away from the places in which the bodies were buried.—*Brooklyn Medical Journal*, November.

NEW INSTRUMENTS.

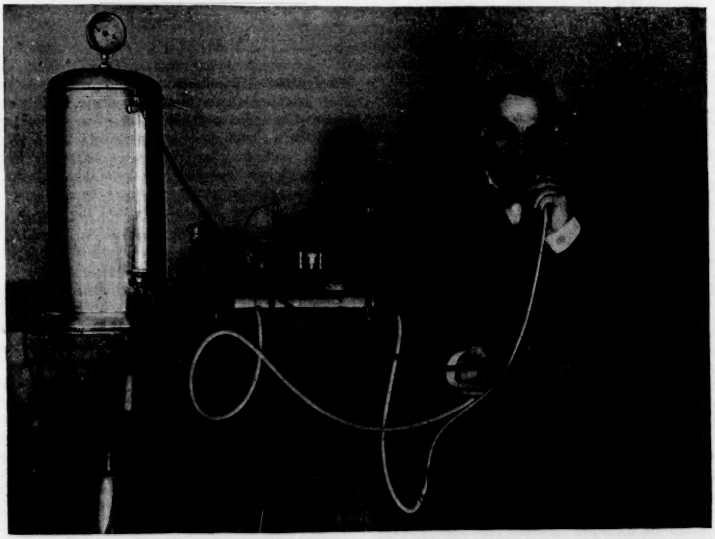
A PRACTICAL OZONE INHALER.

BY W. SCHEPPEGRELL, A.M., M.D.
NEW ORLEANS, LA.

In the October issue of the JOURNAL there is described "A Scientific Ozone Inhaler," by Dr. Cyrus Edson of New York City. Ozone is a useful remedial agent, which has been used to advantage in many pathologic conditions, but the apparatus described is not a conservative method of generating this gas, as but a small portion of electric energy is utilized for this purpose. It compares with the *scientific* method of generating ozone very much as the heating capacity of a single steam-pipe does with that of a modern steam radiator.

The most economical and practical method of generating ozone is by means of the ozonizer first described by Siemens, and which I have used in the treatment of diseases of the nose, throat and ear for some years, and described in the *Journal of Laryngology*, London, July, 1897.

This apparatus consists of a kind of Leyden jar, which is prepared by coating the interior of a glass tube with tin foil and passing over this a second wider tube, also coated with tin foil on its outer surface. Between the two tubes a current of air or oxygen is passed which becomes electrified by induction,



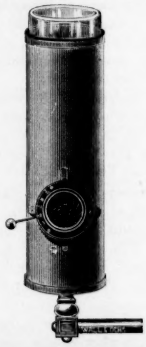
the inner and outer coatings of tin foil resectively being connected with the terminals of a strong induction coil or static machine. By this mean it is possible to convert 10 or 15 per cent. of oxygen passed through the tube into ozone, which is more than twenty times the efficacy of the ordinary disruptive discharge, which is the method used in Dr. Edson's apparatus.

In the description of Dr. Edson's apparatus, it is specified that a static machine should be used to generate the electricity. An induction coil with a capacity of a six-inch spark is equally effective and can be used without correcting the hygrometric conditions of the atmosphere, as is usually necessary with the static machine. The method by means of which the ozone is applied in diseases of the maxillary sinuses is shown in the accompanying illustration.

A NEW LIGHT-SCREEN.

BY JAMES THORINGTON, M.D.
PHILADELPHIA, PA.

This is made by attaching an iris diaphragm to an asbestos chimney. The amount of light passing through the opening



in the diaphragm is controlled by an ivory-tipped lever at the left-hand side. An index at the periphery records the diameter of the opening in millimeters, from one to thirty.

When using the Maddox rod for muscle testing, the light streak can be made thread-like, or very broad, by regulating the size of the opening in the diaphragm.

While this screen may be of use in otology, laryngology, and in general ophthalmology, yet it is primarily for retinoscopy; simplicity and great convenience in controlling the amount of light being it points of merit.

To Messrs. Wall & Ochs I am indebted for their careful workmanship and skill in making a diaphragm the leaves of which are not affected by the heat.

120 South Eighteenth Street.

SOCIETY NEWS.

Southern Illinois Medical Association.—This association will hold its next meeting at Carbondale, Ill., the second Tuesday in May, 1899.

The American Medico-Psychological Association, to hold its next annual session in New York, May 23 to 26, 1899, has for officers: Henry M. Hurd, Baltimore, Md., president; Henry A. Gilman, Mt. Pleasant, Iowa, vice-president; C. Bell Burr, Flint, Mich., secretary and treasurer.

Rome (N. Y.) Medical Society.—At the first regular meeting, held October 11, the following officers were elected: John F. Fitzgerald, president; H. D. White, vice-president; Thos. P. Scully, secretary; Jas. H. Whaley, treasurer. The society meets the second and last Tuesday of each month.

American Academy of Railway Surgeons.—This society, which is to meet in October, 1899, at Omaha, Neb., elected officers as follows: William W. Grant, Denver, Col., president; John P. Pritchard, Manitowoc, Wis., and John P. Lord, Omaha, Neb., vice-presidents; Thomas P. Lacey, Council Bluffs, Iowa, secretary; C. P. Kibler, Corry, Pa., treasurer; Frederic J. Hodges, Ashland, Wis., editor.

Des Moines (Iowa) Pathological Society.—This society held its first annual meeting November 8, and elected the following officers for the ensuing year: E. D. Dorr, president; G. E. Currie, vice-president; M. F. Patterson, secretary; D. W. Smouse, treasurer. M. N. Voldeng was offered the presidency for another year, but refused to accept, believing a change of presidents should be made each year. The society was organized a year ago, and has held thirty profitable meetings, with good prospects for the future.

San Francisco Society of Eye, Ear, Nose and Throat Surgeons.—The regular meeting for November was held the 17th, at the office or Dr. Geo. H. Powers. Dr. Powers presented a case of convergent squint in which the fixation point of the left eye was very excentric, and in which the vision of that eye had gone down to $^{20}/_{200}$. He was very loath to operate, deeming the chance of obtaining a betterment of the deformity very small. The patient insisting, however, he did tenotomy on the inner and on the superior tendons. Strange to say, there resulted almost immediate improvement, not only as to the squint, but the fixation point became much more central, though not yet quite at the exact center, and the vision improved to $^{20}/_{100}$, and is yet improving. From a cosmetic standpoint alone, the operation seemed to have been very satisfactory. Dr. Barkan presented a case of arrested development of the left ear in which only a small portion of the external ear was present, and in which the presence or absence of the inner ear, or of the bony meatus, could not be ascertained. The case had first called at the Cooper College Clinic, where the examination record stated that whisper could be heard in the left ear at a distance of eight inches, and a loud whisper at a distance of six feet. When examined by Dr. Barkan at the meeting of the society, it could not be definitely decided that the whisper could be heard at all on that side, and the result from examination with various tuning-forks was also rather negative, though there was some appearance of hearing a high pitched tuning-fork on the mastoid of the affected side. No operative measure had been thought of or was intended; the case was presented simply for its rarity. Dr. Barkan also presented a case of high myopia which he had recently operated upon with gratifying results. He stated that it was the ninth case of the sort on which he had operated, and was the most unpromising of them all. When seen, the patient, a woman of some 45 years, had vision of fingers at two feet, in the right eye, and six feet in the left eye. The apparent refractive error was —20 in the right and —18 in the left; with —19 right, vision was fingers at six feet, and with—20 in the left, vision was fingers at nine feet. There were numerous floating opacities and retinal changes in both eyes; some atrophic and pigmented spots. The woman could read Snellen 5, at 4 cm. from the eyes. On account of the retinal changes and the extremely bad condition of vision, operation was not advised; but the patient was unremitting in urging that the operation be attempted, stating that she was going blind quite rapidly and could be no worse without any eyes than she was with them in the condition in which they then were. Discission was made, and nine days later extraction of the lens. All the lens matter was not at the time extracted, but it subsequently cleared up nicely by absorption, leaving a good clear pupil, with but one small iritic adhesion. There was some trouble with the eye following the operation, but the inflammatory condition gradually subsided. The vision, after operation, was fingers at from ten to twelve feet; with a – 2 spheric lens, vision was $^{10}/_{200}$; she could read Snellen 1 with a spheric lens of +9, or a cylinder of +2, axis 180°. The Doctor accentuated the fact that we should not consider all the cases of high myopia in which there are retinal changes, apparently grave, as hopeless and beyond the pale of operation. He had performed the operation nine times, and all were gratifying results. Dr. Powers presented two cases of sympathetic ophthalmia in old men, after a lapse of from thirty to fifty years, and in both of which the lost eye had not received a foreign body, but had been destroyed by a simple traumatism. In both cases the sympathetic trouble came on very slowly and was not at first recognized, for the reason that there was no pain or involvement of the destroyed eye. The true condition was eventually suspected and the atrophied eye removed, when the ophthalmia subsided at once. In both the eyes which he had removed he found a bony plate, but no evidence whatever of any inflammatory trouble.

MISCELLANY.

Differentiation of Bacilli.—Kashida, working under the direction of Professor Ogata in the Hygienic Institute of Tokio University, has confirmed the observation of Petruschky and Wurtz, that the bacillus coli, when grown in whey, gives rise to an acid reaction by the fermentation of lactose, whereas the bacillus typhosus does not. He finds that with the bacillus coli the acid reaction is only temporary, being succeeded by an alkaline. The latter is so strong that the colonies in plate-cultures on litmus-milk-sugar-agar, previously reddened by the addition of rosolic acid, acquired an intensely blue color. No such production of ammonia could be obtained with the bacillus typhosus. He recommends as a culture-medium a 1.5 per cent. bouillon agar, to which are to be added 2 per cent. of milk-sugar, of urea, and 3 per cent. tincture of litmus.—*Centralb. f. Bakt.*

Hardly an Accepted Fact.—Mr. Henry Guy Carleton, at the dinner of the New York State Medical Association at the Manhattan Hotel, New York city, October 19, asserted that stammering was due to the presence of the comma bacillus. In his own case he averred that the malady itself was not congenital, but appeared when he began to talk. According to his microscopic slides he said the microbe was abundantly in evidence after every syllable. He freely gave his discovery to the profession without any design of profit from patent or trade-mark.

Appendicular Liver.—Professor Dieulafoy asserts that any appendicitis, even the most benign, may become the cause of a hepatic infection manifested by the rapid formation of multiple abscesses, by the dozens and hundreds, scattered throughout the liver, transforming it into a sort of purulent sponge, to which he gives the name of appendicular liver. The disproportion is most striking between the tiny closed cavity of the appendix where the toxi-infection is elaborated, and the great organ affected by it, in which the microbes, endowed with incredible virulence, may determine such extensive lesions in the course of a few weeks or even days. The hepatic complications of appendicitis appear abruptly, sometimes in the midst of convalescence, commencing with a terrible attack of fever, followed by others, accompanied by pain in the organ

and its rapid enlargement, icterus, and frequently vomiting and diarrhea. Appendicular hepatic infection is always fatal. The only treatment is prophylactic, which consists in operating during the first days, without allowing this complication on the part of the liver time to develop.—*Semaine Méd.*, November 9.

Chronic Suppurations of the Tonsils.—The surface of the tonsils may appear perfectly normal, and yet there may be unsuspected abscesses below. A case was recently described at the Berlin Society of Internal Medicine, in which, after repeated inflammations of the tonsils, dyspnea and edema of the glottis suddenly appeared, requiring tracheotomy. At the necropsy a purulent infiltration of the latero- and retropharyngeal tissue was found, extending to the mediastinum, with pus also in the pleural sacs. The tonsils were the seat of several abscesses. The infection may have extended locally from them, but there was probably also direct absorption of pathogenic germs from the repeated inflammations. The conclusions were drawn that every angina must be subjected to rigorous treatment and perfect antisepsis of the mouth and throat should be maintained. —*Deutsche Med. Woch.*

Chorea Minor from Foreign Body in the Ear.—*Memorabilien* (October 21) relates a case of chorea minor, in a girl of 13 years, that has lasted two years, when a physician found a piece of lead from a screw pencil in her ear, resting against the tympanum. The foreign body had never caused any disturbances in the ear, but its removal was followed by complete recovery from the chorea.

Contemporaneous Uterine and Extra-Uterine Pregnancy.—Kiriac reports a case terminating in abortion and the extraction of a fetus from the posterior cul-de sac. On account of temperature he removed the placenta and uterus later by laparotomy. The patient recovered.—*French Cong. of Gyn. and Obstet.*

Strychnin-like Alkaloid in a Corpse.—During the examination of a partially decomposed body, Mecke met with an alkaloid which chemically might easily be mistaken for strychnin, but which physiologically did not injure frogs, had scarcely a bitter taste, and did not produce the least effect on animals when injected subcutaneously. With picric acid it gave a yellow crystalline precipitate, becoming violet on treatment with sulphuric acid and bichromate. Bichromate alone produced a yellow crystalline precipitate, changing to blue with sulphuric acid. Bichromate and acid together yielded a blue, afterward a reddish, color. Ferrocyanid gave a yellow precipitate, turned violet by acid. On the other hand, chlorin-water gave (as with strychnin) a milky liquid, but when after evaporation the residue was treated with ammonia, it became a dirty green. It dissolved in sulphuric acid to a yellowish liquid, afterward changing to cherry and rose-red. Frohde's reagents dissolved it, giving a dull violet color, which finally became olive, and then green. The substance is not the same as that discovered under similar conditions by Amthor in 1887.—*Phar. Zeit.*

Anesthetics in Scandinavian Countries.—The report presented at the Northern Surgical Congress held at Helsingfors in August, embraced 25,305 anesthesias with chloroform, resulting in 15 deaths, asphyxia in 303 cases, and vomiting in 1789. With ether, 2926; no deaths; asphyxia in 25; vomiting in 309. With chloroform and ether in 3616 anesthesias there were no deaths, but asphyxia in 82, and vomiting in 464. With 794 with ethyl bromid, there were no deaths; asphyxia in 3 and vomiting in 39. The secondary effects noted were: with chloroform 18 cases of death, 54 of heart failure, 46 of pulmonary troubles, 153 of albuminuria, 49 of somnolency, 20 of icterus, and 4338 of vomiting. With ether: 3 deaths, 4 cases of heart failure; 28, pulmonary troubles; 46, albuminuria; no icterus; 585, vomiting. With chloroform-ether, 8 deaths; 13 cases of heart failure; 13, pulmonary troubles; 17, albuminuria; 10, somnolency; 1, icterus; 731, vomiting. No secondary effects were observed with ethyl bromid except vomiting in 7 cases. The total number of all kinds of anesthesia reported was for the last three years, 32,641. The mortality was therefore: with chloroform, one death in 1687 anesthesias, and one death in 1406 from the after-effects. No deaths from the other narcotics directly, but indirectly one in 975 with ether; one in 452 with chloroform-ether, and none directly or indirectly from the 794 anesthesias with ethel bromid. The anesthesias are classified and discussed with much detail in the volume of the *Nordiskt Med. Ark.* devoted to the Congress.

The World's Food-Supply.—At the opening of the British Association for the Advancement of Science, President Crookes, in his inaugural address, broached the theory that beyond 1931 the wheat supply would not keep pace with the needs of the population. He said that nitrate of soda was not inexhaustible, but that nitrogen in the atmosphere was unlimited, and suggested the burning of nitrogen in the air by a powerful electric current. Niagara Falls, according to his view, could thus produce fixed nitrogen at a cost of £5 ($25) per ton, thereby making a yield of wheat equal to thirty bushels an acre. As a saving clause he admitted that the exuberant tropic food stuffs might supply the threatened deficiency of wheat for the benefit of future generations.

Eaters of Human Flesh.—According to a French writer, whose statements appear in tha *Medical Presse*, 20 per cent. of all cannibals eat the dead for the purpose of glorifying them; 19 per cent. eat great warriors in order that they may inherit their courage, and eat dead children with a view of renewing their youth; 10 per cent. their near relatives from religious motives, either in connection with initiatory rites or to glorify deities, and about 5 per cent. feast for hatred, expecting in this way to avenge themselves upon their enemies. Those who devour human flesh because of famine are reckoned as 18 per cent. There remains only 24 per cent. who eat such flesh because they prefer it.—*N. Y. Tribune.*

Porcelain Enamel Casts for Filling Teeth.—A new method of filling teeth has been suggested by the author of a communication received by the Paris Académie de Méd. in competition for a prize. He has used it for two years and in 203 decayed teeth, with most satisfactory results in every case. He first prepares the tooth for the filling in the usual aseptic manner, and then takes an impression of the cavity with a thin sheet of platinum which forms a hollow mold. The enamel paste is poured into this mold and a casting made in one piece, identic with the cavity in the tooth. The cavity is then filled with cement; the enamel casting is inserted and carefully fitted into place. The normal color and transparency of the tooth is retained; an important esthetic improvement over gold fillings; the enamel never wears out; the cement is protected on all sides from the air and saliva, does not undergo any alteration and the amount remaining in the crevices is so minute that there is no irritation of the nerves of the tooth, which is one of the drawbacks to cement fillings. He uses porcelain enamel with a melting point of 1200 degrees C., and makes the small casting on the spot and at the moment needed, with a small English steel furnace lined with fire-brick, which attains a temperature of 1600 to 1800 degrees. He is not content with the application of this method to dentistry alone, but suggests its application to surgical operations in which there are bone defects to be remedied. He thinks that a porcelain enamel casting made on the spot, aseptic, never corroding, never wearing out, would answer the purpose perfectly in cases of necrosis, osteomyelitis, etc., although he has no practical experience with it.—*Bulletin*, October 31.

Delirium from Sodium Salicylate.—Two cases of acute delirium lasting about forty-eight hours, with no fever, after the ingestion of twelve grams of the salicylate in a day and a half, have been recently reported.—*Presse Méd.*, November 5.

Trained Workers for the Feeble-minded.—The school for the feeble-minded at Faribault, Minn., has recently celebrated the first graduating exercises of its training school for attendants and nurses. This training school is a new departure in work for the feeble-minded, and its results give satisfaction to the institution and State officials. The course extends over two years, and the pupil attendants take about forty lectures a year. The subjects covered are elementary physiology, hygiene, practical sanitation, and the elements of chemistry; but the chief element in the training is not the knowledge obtained from books. The most important factor is the attendant's relation toward the children—or the purpose of the school is to develop the motherly relation toward the children. The spirit of tenderness and devotion of these foster-mothers is magnified, and they must become proficient in correcting the diet, habits, exercise and cleanliness of their wards.—*Charities' Review*, November.

Hospitals.

The new hospital of the University of Colorado, at Boulder, Colo., was dedicated November 19. It has been erected at a cost of $15,000, the building, a handsome three-story brick structure, occupping a site adjacent to the campus and near the medical laboratories, on the high bluff overlooking the river and city of Boulder.——Early in November the McDonald Building of the Presbyterian Hospital, Cincinnati, was dedicated. The building was erected at a cost of $60,000, the entire expense being met by Mr. and Mrs. McDonald, whose contributions to the Hospital and the Laura Memorial College (Medical School for Women) amount to $130,000.

A Proposed Sanitarium.—The Knights of Pythias have on hand a fund of $12,000 as a nucleus of the proposed fund of $500,000 for a sanitarium at Hot Springs, Ark. This may require five years for realization. The members of the organization in the United States are to be assessed one dollar each.

Re-establishment of Regimental Hospitals.—The War Department has recently authorized the establishment of regimental hospitals in the newly formed camps in Alabama, Georgia and South Carolina. According to a formal order the purpose of the regimental hospital in field service is to furnish protection and care to the sick of the command while on a march or in the field, or to those temporarily sick while in camp of instruction. It is an emergency hospital in the one case and a detention hospital in the other, but is not intended for the treatment of the very ill, who in the event of a move would prove to be an incumbrance to the regiment. When cases are found to be serious in nature they should be promptly transferred to brigade or division hospital, except where regiments are isolated, in which event the bed capacity may be increased as necessary, all of the sick being cared for and transfers made to general hospitals when ordered by proper authority. Four hospital tents are allowed to each regiment, two as wards, one as dispensary and storeroom, and one as mess room. The personnel is to consist of three hospital stewards, one acting steward and six privates of the hospital corps as nurses and orderlies, with one private for each ambulance and wagon. Two four-horse wagons are allowed to each hospital. On November 15 a circular from the Surgeon-General's Office announced the outfitting allowance of instruments, disinfectants, furniture, bedding, clothing and miscellaneous articles for these small hospitals. When a regiment is so located that its sick can not be sent to a brigade, division or general hospital the regimental hospital will be expanded to meet the requirements of the case.

X-Ray Apparatus for Military Posts.—According to the *Press and Circular*, November 9, the British War Office, recognizing the advantages of the X-ray in military surgery, has issued a large number of outfits to the home and foreign stations under its charge.

Montauk Not Criticised.—A clipping before us with this caption, says: "Army men are following with pained interest the details which reach this country of the sickness and suffering at Montauk and the other military camps. I am bound to say that I myself neither hear nor read of any criticism unfavorable to our government in this matter. Discussing the question with a military officer of high rank, he quietly said that any man of sufficient age could tell such stories of Crimean hospital mismanagement and disease as would hardly be believed in these days. The mere memories, ancient as they are, curb any temptation to criticise the misfortunes of others. Yet there is no need to go so far back, for in the late Afridi campaign many of the arrangements for the sick and wounded were as primitive and hopelessly inadequate as if the clock had been put back forty years. On the other hand, the surgical department of the Soudan expedition is almost perfection, as well it might be, when Kitchener has been seeing to it all for many thoughtful months."

Naval Medical Incident.—One of the gunners of Admiral Schley's fleet is said to have lost his reason as a result of the naval battle of July 3, with Cervera's squadron. He is now in St. Elizabeth's Insane Asylum, Washington, D. C., undergoing treatment. The patient's trouble began with concussion of the brain, caused by the detonation of the heavy guns fired during the fight. This is regarded as an unusual case. The report set forth that eight of the ten casualities upon the American ships in the battle of Santiago were ruptures of the ear drums, caused by the terrific cannonading. One of the cases was that of Lieutenant Harrison of the Oregon, who stuck his head out of a turret just as a thirteen-inch rifle was fired. The noise and shock of the explosion lacerated the drum of both ears, and for a time he was totally deaf. Under the careful treatment of the naval surgeons he is gradually recovering his hearing and will in all probability be as well as ever in a few more months. All the other men who were similarly affected have been cured and have returned to their ships for duty. During the fight at Manila there is no record of any of Admiral Dewey's men receiving injuries of this sort. The explanation of this is simple. The gunners on battleships are accustomed to plug their ears with cotton to protect them before firing begins, but at Santiago there was no chance for precautions of this kind. The men were on deck for inspection at the time the enemy was discovered issuing from the harbor, and they simply rushed to their guns and began blazing away without thought of cotton or anything else. At Manila the men were all prepared for the fight, every precaution having been taken to prevent injury to ear drums, etc.

Army Medical Conditions on the Pacific Coast.—Reports from the Division Hospital of the Eighth Army Corps, the command on the Pacific coast from which the strength of the Philippine expedition is kept up, are satisfactory as showing a steady improvement in the medical conditions. The hospital consists of two new brick buildings with hospital and conical wall tents, the whole having a capacity of 320 beds. The tent accommodations are utilized for contagious cases which can not be isolated properly in the permanent buildings, and for the stronger convalescents who are not proper subjects for furlough or discharge. In August, 177 cases of measles were treated—a considerable reduction from July—due in part to prompt isolation and thorough disinfection, and in part to the exhaustion of the susceptibility of the commands. In September, one of the wards for this disease was discontinued. Formaldehyde was used for the disinfection of clothing in these cases. Fifty-nine cases of pneumonia—13 fatal—were reported in August, and 31, with 3 deaths, in September, quite a number of these being sequent to measles. Sixty-four cases of mumps in August and 70 in September were complicated with orchitis in an unusual proportion. Six cases of malignant scarlet fever were admitted in August, in two of which

death resulted from complications. Vigorous sanitary precautions were taken in these cases. All clothing was burned in preference to trusting to disinfection. No case occurred in September. During this month there were, however, 4 cases —2 fatal—of diphtheria. Eight cases—3 fatal—of cerebrospinal meningitis were treated in August, and 9 cases—2 fatal—in September. In August there were 97 cases of typhoid fever, with 6 deaths, and in September 162 cases, with 16 deaths. Hemorrhage from the intestines was the determining cause of death in the fatal cases. Many of the cases were exceedingly mild. Great care was exercised to have typhoid discharges properly and immediately disinfected and promptly disposed of. This division hospital is now competent to take care of all the sick of the command, those formerly treated in the city hospitals having been furloughed or withdrawn. Thirty trained nurses are now on duty at the hospital, which is under the charge of chief-surgeon W. S. H. Matthews, U. S. V.

Colleges.

Harvard is to receive $10,000 from the estate of the late Edward Austin of Boston, for the laboratory of the medical school.——On November 25, the Indiana Medical School, a department of the University of Indianapolis, was destroyed by fire, caused by a defective furnace. The loss will amount to $40,000; insurance $35,000.

Societies.

The following recent meetings are noted:

Arkansas.—Little Rock Medical Society, November 12.

California.—California Northern District Medical Society, Sacramento, November 15.

Illinois.—Champaign County Medical Society, Champaign, November 17; Chicago Medical Society, November 23; Southern Illinois Medical Association, Cairo, November 18.

Indiana.—Tippecanoe County Medical Society, Lafayette, November 21.

Iowa.—Des Moines County Medical Society, Burlington, November 16.

Maine.—Maine Academy of Medicine, Portland, November 14.

Maryland.—Baltimore County Medical Association, Baltimore, November 23; Medical and Chirurgical Faculty of Maryland, Frederick, November 16 and 17; University of Maryland Medical Society, Baltimore. November 17.

New York.—Albany County Medical Society, Albany, November 16; N. Y. State Association of Railway Surgeons, Manhattan, November 17; Oswego County Medical Association, Oswego, November 16.

Ohio.—Columbus Academy of Medicine, November 21; Union Medical Association of Northwestern Ohio; Akron, November 15.

Tennessee.—Middle Tenn. Medical Association, Nashville, November 17.

Utah.—Salt Lake Medical Society, Salt Lake City, November 14.

Request for Information.—The catalogue committee of the Alumni Society of the Medical Department of the University of Pennsylvania desires a short biography of every medical alumnus, and this appeal is made for aid of graduates of the University in such compilation. The following is the form of biography desired: 1, name in full; 2, father's name and mother's maiden name; 3, date and place of birth; 4, State matriculated from; 5, date of matriculation; 6, date of graduation; 7, title of thesis; 8, place of practice and present address; 9, college attended; 10, titles; 11, publications made and positions held; 12, if ever in the United States service, in what capacity and when and how long; 13, if married give maiden name of wife; 14, children's names, if any; 15, if dead, give date and place. Several thousand biographies have already been catalogued. The Committee especially desires the histories of the graduates between the years 1781 and 1790, names of whom are found in the "Proceedings of the Alumni Society" for 1898, and already widely distributed. Data in reference to medical alumni serving in the "French and Indian," the "Revolutionary," the "War of 1812," the "Mexican," the "Civil War," and the recent Cuban War, it is hoped will soon be ready for collation. Assistance in this work is earnestly solicited. R. G. Curtin, M.D., Chairman; F. Savary Pearce, M.D., Secretary.

San Francisco.

Cooper Medical College.—The long proposed change in the time of the commencement of the college year of Cooper Medical College has finally become a fact. The next regular course will commence on January 3, and close Aug. 12, 1899. The next following course will commence Oct. 1, 1899, and close May 31, 1900. Thereafter the regular course will commence on August 15 and continue for eight months. This change has been made in order to conform to the general custom of medical colleges throughout the country, of having the regular course in winter instead of the summer months. The change is a very welcome one to both faculty and students.

Faculty Changes.—At the last regular meeting of the faculty of Cooper Medical College Drs. Stanley Stillman and Emmet Rixford were elected professors of surgery, and Dr. William Fitch Cheney was elected professor of the principles and practice of medicine. Drs. Stillman and Rixford have for some time been assistants in the chair of surgery and their promotion was expected. Dr. Cheney has done remarkably good work in the chair of children's diseases for several years past, and has been rapidly making a name for himself not alone within the State of California.

A New Medical College.—The medical department of the University of California, at the opening exercises of their new home south of Golden Gate Park, San Francisco, October 22, appointed a Committee of Ways and Means to extend their influence. Correspondence with various institutions regarding plans and costs is one of the methods. The new building is well provided with laboratories, but eminent men in various lines of work are necessary to fill the chairs, and supporting salaries are to be given so that entire devotion to their work may be assured.

London.

Membranous Rhinitis.—A most suggestive report upon membranous rhinitis was presented before the late Medical and Chirurgical Society by Dr. Lambert Lack. In spite of the mild form and chronic six or eight weeks' course of the disease, the Klebs-Loeffler bacillus was found to be present in every one of the thirty-three cases examined. Although mild, the disease was highly infectious and the bacilli proved fully virulent to animals, to produce abundance of toxins and to grow luxuriantly upon culture media. Hence the problem at once arises, why the toxic symptoms of diphtheria were not produced in at least some of these cases? Dr. Lack himself was inclined to attribute the immunity to the presence of other organisms associated with the Klebs-Loeffler, while in the discussion that followed, both Dr. Allan Macfadyen and Dr. Goodall regarded the resistance of the tissues at the point of invasion as the chief factor. This would seem the more probable explanation, in view of the high bactericidal power of the nasal mucus, and also of the frequency with which the diphtheria bacillus is found in healthy noses without giving rise to any toxic symptoms whatever. Indisputable as is the connection between diphtheria and the Klebs-Loeffler bacillus, evidence is rapidly accumulating to show that its mere presence in the fauces or nose is far from being the only factor, and that the resisting powers of the individual, or of the different regions or tissues, plays an even greater part. Possibly the dangerousness of that old remnant—the tonsil—as a point of entry for infection, may be as great in this disease as we are beginning to regard it in scarlet fever and in tubercle.

Clinical Lectures.—The unique clinical lectures of Mr. Jonathan Hutchinson, held every Wednesday afternoon at his private clinical museum, are becoming one of the best known and attended "medical fixtures" of the London winter session. Among the cases presented at the last meeting was a most typic one of Paget's disease, a raw, red, oozing patch, slightly elevated at its serpiginous edges, of about the size of the palm of the hand, upon the left breast of an old woman of 72. It begins upon the nipple and runs an extremely mild and chronic course, lasting for years and seldom involving the lymphatic

glands or even the deeper layers of the skin itself—"a granulating surface which never heals," as the lecturer tersely described it. Another case was a striking illustration of the fact that the wages of sin and the results of economy are sometimes hardly distinguishable from each other. A man of 40, with an indurated sore upon his upper lip, huge swollen cervical glands, a hoarse voice, a perforated palette, and a superb crop of huge flat-topped condylomata between the nates and in both groins, all from buying in a moment of parsimony a second-hand pipe. The sore upon the lip appeared only ten days after the first use of the pipe and the classic procession followed. The condylomata in the groins were so large, flat and bathed in pus as to give an almost typic picture of the tubercles of Yaws, much of which the lecturer believes to be neglected syphilis. The case was a good illustration of the virulence of syphilis from an extra genital chancre, as the usually tertiary perichondritis of the larynx had occurred before the primary sore had healed or the buboes disappeared and the whole train of symptoms had developed in four months' time.

Craig Colony Prize.—The president of the board of managers of Craig Colony offers a prize of $100 for the best contribution to the pathology and treatment of epilepsy, originality being the main condition. The prize is open to universal competition, but all manuscrips must be submitted in English. All papers will be passed upon by a committee to consist of three members of the New York Neurological Society, and the award will be made at the annual meeting of the board of managers of Craig Colony, Oct. 10, 1899. Each essay must be sealed in an envelope containing the name and address of the author, and bearing on the outside the motto or device which is inscribed upon the essay. The successful essay becomes the property of the Craig Colony, for publication in its "Annual Medical Report." Manuscripts should be sent to Dr. Frederick Peterson, 4 West Fiftieth Street, New York City, on or before Sept. 1, 1899.—*The Craig Colony Press.*

Gleanings.—Ballaban's new cyclochrome for rapid changes of colors is proving a desirable substitute for the inexact perimeter.——Lossen has secured exceptionally well-shaped nostrils and tip in rhinoplastics, with a rubber frame the same color as the skin, made by an artificial tooth maker. Israel forms the tip with a piece of the tibia.——Successful resection of the cardia in dogs followed only by ten days of vomiting; probably still easier of performance on man in case of carcinoma of the cardia, diagnosed early by palpation.——Péron reports experiments in which the effusion in spontaneously healing tuberculous pleuritis was found to possess an immunizing power in tuberculous infection in dogs. He queries whether withdrawal of the effusion by puncture is not directly injurious to the patient (*Klin. Therap. Woch.*, November 6).——Case of leukemia reported, evidently due to internal injuries received in a crowd, in which the spleen had been injured.——Case of retinitis in Bright's disease simulating a malignant tumor. Nothing was found after extirpation but hyaline degeneration and glaucomatous phenomena with decollement of the retina. First instance on record of this lesion in Bright's disease (*Wratsch*, August 8).

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—To duty in the camps: To the Commanding General First Army Corps at Americus, Ga.: Major Frank J. Ives, brigade surgeon, as chief surgeon Second Brigade, Second Division, relieving Major Frank Bruso from this assignment; also Acting Asst.-Surgeons F. Arthur Zeller and Herbert J. Harris. To the Second Army Corps: Major Lewis Balch, brigade surgeon, for assignment to the Second Brigade, Second Division, subsequently ordered to the First Division. First Army Corps, as sanitary inspector with the first troops embarking for Cienfuegos, Cuba. To the Seventh Army Corps: Major James E. Pilcher, brigade surgeon, for assignment. To the Sixteenth U. S. Infantry: Acting Asst.-Surgeon B. F. Van Meter, at Fort Thomas, Ky. To the Second U. S. Artillery for duty with its batteries, at Savannah, Ga.: Capt. Geo. J. Newgarden. Lieut. Clarence J. Manly from Columbus Barracks, Ohio, and Lieut. R. P. Strong from the Fourth Army Corps, at Huntsville, Ala., all assistant-surgeons, U. S. Army; also Acting Asst.-Surgeon Ricardo Gaston, from Fort Crook, Neb.

To Havana, Cuba: Lieut.-Col. R. M. O'Reilly, chief surgeon Vols., on completion of his present duty in Washington, D. C.; Major John J. Archinard, brigade surgeon, from duty at Santiago, and Acting Asst.-Surgeon Joaquin L. Duenas.

To Santiago, Cuba: Major Valery Havard, surgeon, U. S. Army, returning to station; Lieut. Ira A. Shimer, assistant-surgeon, U. S. Army, from U. S. General Hospital, Fort Myer, Va., and Acting Asst.-Surgeon Rupert Norton, on the expiration of his present leave. Acting Asst.-Surgeons Samuel P. Cottrell and James G. McKay.

To Manila, Philippine Islands: Acting Asst.-Surgeon M. A. Robert, from York, Pa.

To Honolulu, Hawaiian Islands: Major M. W. Wood, surgeon, U. S. Army, from Boise Barracks, Idaho.

To Hospital Ships: Lieut. P. C. Fauntleroy, assistant-surgeon, U. S. Army, from the Josiah Simpson General Hospital to the *Missouri*, and Capt. Alex. N. Stark, assistant-surgeon, U. S. Army, from the *Missouri* to command the *Bay State*.

To the Josiah Simpson General Hospital, Fort Monroe, Va.: Acting Asst.-Surgeons R. B. Westredge, John A. Metzgar, H. A. Barnhardt, Ed. W. Pinkham John S. Fogg, Ralph L. Taylor and Roy A. Wilson.

To the care of soldiers in civil hospitals: Major David C. Peyton, brigade surgeon, Vols., to assume supervision of the sick in the following hospitals in Pennsylvania: Chester County Hospital, West Chester; St. Joseph's Hospital and Lancaster General Hospital, Lancaster; Reading Hospital find St. Joseph's Hospital, Reading; Good Samaritan Hospital and Lebanon Hospital, Lebanon; Harrisburg Hospital and St. Clare infirmary, Harrisburg; York Hospital, York; Charity Hospital, Norristown; Pottstown Hospital, Pottstown; Pottsville Hospital, Pottsville; and Columbia Hospital, Columbia. In Baltimore, Md., Major Lewis W. Crampton, surgeon, U. S. Army. In Providence, R. I., Acting Asst.-Surgeon H. P. Abbott.

To duty with the Fourth Army Corps, Huntsville, Ala., Major Rafael Echeverria, brigade surgeon, Vols.

To military posts: Major E. C. Carter, brigade surgeon, Vols., to Washington, D. C., as attending surgeon, on completion of his duties at the Sternberg and Leiter General Hospitals. Capt. Geo. J. Newgarden, assistant-surgeon, U. S. Army, to Fort Adams, R. I. At Fort Sam Houston, Texas, Capt. Chas. Lynch, assistant-surgeon U.S.A. At Fort Logan H. Roots, Ark., Lieut. Samuel M. Waterhouse, assistant-surgeon U.S.A. At Fort Sill, Okla., Major Marlborough C. Wyeth, surgeon U. S. A., from duty as medical supply officer at Camp Meade, Pa. At Fort Wayne, Mich., Capt. Merritte W. Ireland, assistant-surgeon U. S. A., from duty at Santiago and Montauk Point. At Fort Hamilton, N. Y., Major A. H. Appel, surgeon U. S. A., his orders to Fort Grant, Ariz., having been rescinded. To Sullivan's Island, S. C., Acting Asst.-Surgeon F. A. Holliday, from Washington, D. C.

Leaves of absence granted: Capt. Francis A. Winter, assistant-surgeon U. S. A., and the following acting assistant surgeons: Rupert Norton, E. A. Southall, Frank Roberts and Randall R. Hunter.

Sick leaves granted or extended: Major W. H. Wakeman, brigade surgeon Vols.; F. D. Bain, surgeon Second Ohio Infantry; Major Hiram B. Thompson, Surgeon Third Connecticut Infantry; Major Murray T. Clements, surgeon Fifth Massachusetts Infantry; Major Chas. T. Pollard, surgeon Fifth U. S. Vol. Infantry; Captains Henry C. Fisher and Jefferson D. Poindexter, assistant-surgeons U. S. Army; Captain Ellis Duncan, assistant-surgeon First Kentucky Infantry, and Acting Asst.-Surgeons John Horni, Elbert E. Persons, Roy A. Wilson, H. B. Emerson and Milton D. Norris.

Honorably discharged: Majors Royce D. Fry, Francis T. Metcalf, Frank Bruso, Oscar Le Seure and Lewis Balch, brigade surgeons; and Capt. Herbert W. Cardwell, assistant-surgeon Second Oregon Infantry, to accept commission as chief surgeon U. S. Volunteers.

Resigned: Capt. Chas. S. Jordan, assistant surgeon First North Carolina Infantry, and Lieut. John M. Martin, assistant-surgeon Fifteenth Pennsylvania Infantry.

Contracts annulled: Acting Asst.-Surgeons Benjamin F. Wooding and Lewis M. Walker, Josiah Simpson General Hospital; Roger B. Ames, Huntsville, Ala., Jesse Ramsburgh, Plattsburgh Barracks, N. Y., and Acting Asst.-Surgeon J. A. Dunwody, of Cripple Creek, Colo.

Retired: Major Norton Strong, U. S. Army.

CHANGE OF ADDRESS.

Becker, B. A., from Dubuque, Iowa, to Silver Lake, Wis.
Barslow, J. M., from 221 S. 6th St. to Merriam Block, Council Bluffs, Iowa.
Budwig, M., from 150 2d Ave. to 226 E. 114th St., New York City.
Bernheim, A., from Paducah, Ky., to 1940 N. 6th St., Philadelphia, Pa.
Burkholder, J. F., from 554 E. 55th St. to Reliance Bldg., Chicago.
Durham, C. O., from 302 to 602½ S. Ill. St., Indianapolis, Ind.
Fanning, G. J., from Harlem, Mont., to New Orleans, La.
Hagen, M. R., from Sparta, Wis., to Valdosta, Ga.
Gillin, C. W., from Doon to 4th and Jefferson Sts., Waterloo, Iowa.
Harbeck, J. H., from Boulder, Colo., to Cuernavaca, Mexico.
Herr, A. W., from Battle Creek, Mich., to 1926 Wabash Ave., Chicago.
Klebs, E., from Stewart Bldg. to 4416 Indiana Ave., Chicago.
Lemoine, R. S., from 1623 to 3526 Washington Ave., St. Louis, Mo.
Prioleau, W. H., from Charleston, S. C., to 242 W. 43d St., New York City.
Peavy, J. F., from Atmore, Ala., to Asheville, N. C.
Raynor, W. J., from Denver to Fort Logan, Colo.
Rowe, S. B., from 925 Bayard to 3437 Bell Ave., St. Louis, Mo.
Smith, J. W., from Cumberland, Va., to Rowlesburg, W. Va.
Schuster, B. L., from Milwaukee, Wis., to Am. Circus 2, Berlin, Germany.
Siegelstein, L. E., from 299 to 333 Woodland Ave., Cleveland, Ohio.
Terry, M. C., from 628 to 718½ Adams St., Chicago.
Wright, W. J., from Lansing to Gregory, Mich.
Williams, C. C., from 1396 Winfield St. to 716 Westlake Ave., Los Angeles, Cal.

LETTERS RECEIVED.

Arnold, E. F. G., New York City; American Therapeutic Co., New York City.
Bell, Samuel, Newberry, Mich.
Carson, S. L., Velpen, Ind.; Croftan, A. C., Pasadena, Cal.; Corr, A. C., Carlinville, Ill.
Dorr, H. L., Boston, Mass.
Elliott, A. R., New York City.
Fernandez, J. D., Jacksonville, Fla.
Gould, Geo. M., Philadelphia, Pa.; Graham, Douglas, Boston, Mass.; Gulley & Crawford Adv. Agency, Chicago.
Hulen, V. H., New York City; Hare, H. A., Philadelphia, Pa.; Havard, V., Bridgeport, Conn.
Kidd, J. W., Joliet, Ill.; Kirkland, W. A., Ft. Collins, Colo.
Lehn & Fink, New York City.
Morley, Geo. A., Crookston, Minn.; Morriss, A. W., Mrs., Lebanon, Ill.; Meinlein, F. A., Buffalo, N. Y.
Norwich Pharmacal Co., Norwich, N. Y.
Peacock Chemical Co., New York City; Putnam's Sons, G. P., New York City; Phelps, A. M., New York City.
Robertson, C. M., Davenport, Iowa.
Smith, W. O., Toledo, Ohio; Smart, Chas., Col., Washington, D. C., (2); Spachman, J. P., DuBois, Pa.; Schmidt, E. T., St. Paul, Minn.
Taylor, P. K., New York City; Tindal, E. F., Stone Bluff, Ind.; Thomas, J. W., Pheonix, Ariz.; Thompson, J. A., Cincinnati, Ohio.
Van Hook, W., Chicago.
Wright, W. J., Gregory, Mich.; Warner & Co., W. R., Philadelphia, Pa.; Will, O. B., Peoria, Ill.; Wooten, Joe S., Austin, Texas; Wilder, W. H., Chicago.